

HOW TO PREVENT
▼ SICKNESS ▼

G. L. HOWE . M. D.

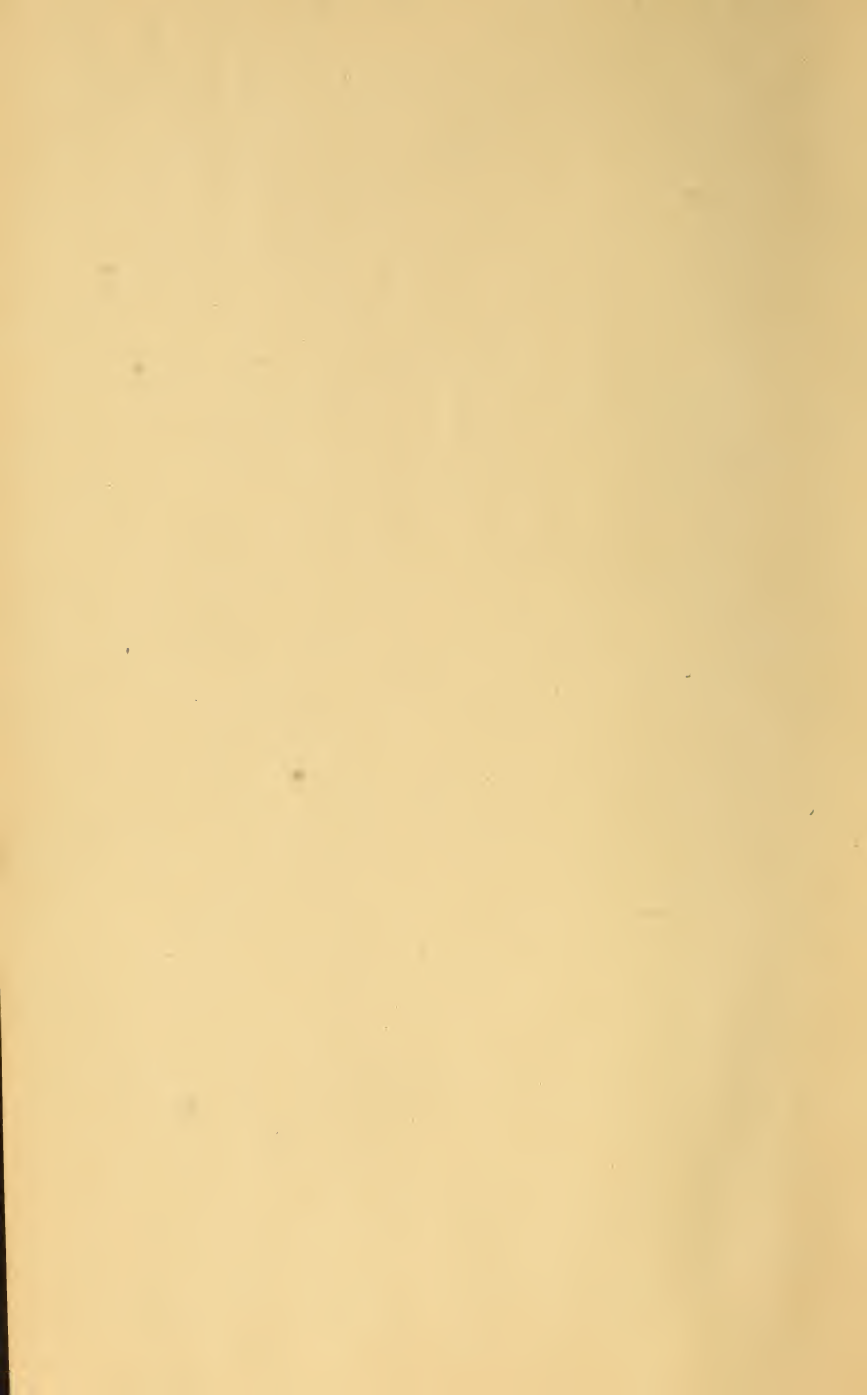


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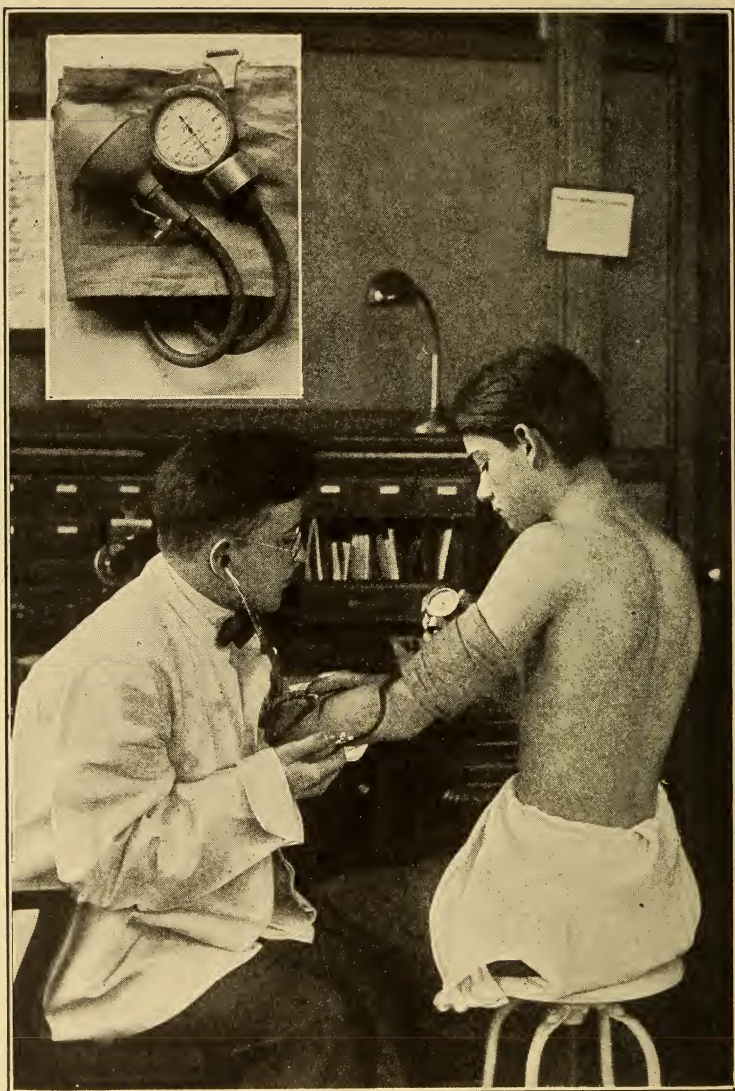
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HOW TO PREVENT
SICKNESS



THE INSTRUMENT USED TO DETERMINE BLOOD PRESSURE

HOW TO PREVENT SICKNESS

A Handbook of Health

BY

G. L. HOWE, M.D.

Medical Director, Eastman Kodak Company

ILLUSTRATED



HARPER & BROTHERS PUBLISHERS
NEW YORK AND LONDON

RA 425
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HOW TO PREVENT SICKNESS

Copyright, 1918, by Harper & Brothers
Printed in the United States of America
Published October, 1918

I-8

OCT 29 1918

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CONTENTS

INTRODUCTION	PAGE xxiii
------------------------	---------------

PART I

COMMUNICABLE DISEASES

WHAT CONTAGIOUS AND INFECTIOUS DISEASES ARE . .	3
WHAT GERMS ARE	3
WHERE FOUND	4
SIZE	4
SHAPES	4
HABITS	5
"CATCHING" DISEASES	5

GENERAL PREVENTIVE MEASURES.

I. KEEP THE BODY IN THE BEST POSSIBLE PHYSICAL CONDITION	6
1. EAT THE PROPER AMOUNT OF NOURISHING FOOD.	
2. BREATHE ALL THE FRESH AIR POSSIBLE.	
3. TAKE REGULAR DAILY EXERCISE.	
4. GET SUFFICIENT SLEEP.	
5. KEEP THE BODY CLEAN.	
6. BE REGULAR IN YOUR HABITS.	
7. BE TEMPERATE IN ALL THINGS.	
8. WEAR THE PROPER CLOTHING.	
II. USE YOUR OWN TOWEL ONLY	37

CONTENTS

	PAGE
III. USE YOUR OWN DRINKING GLASS OR CUP . . .	39
1. SANITARY BUBBLING FOUNTAINS.	
2. INDIVIDUAL DRINKING-GLASSES.	
IV. DRINK PURE WATER ONLY	43
KINDS OF WATER TO AVOID.	
SOURCES OF SAFE WATER-SUPPLY.	
V. PROTECT YOURSELF AGAINST FLIES, MOSQUITOES, RATS, MICE, AND OTHER VERMIN	47
A. FLIES.	
HABITS.	
FLY-BREEDING.	
CONNECTION BETWEEN FLIES AND DISEASE.	
FLY-DESTRUCTION.	
1. ATTACK THEIR BREEDING-PLACES.	
a. CARE OF MANURE.	
b. CARE OF GARBAGE.	
c. BORAX AS A DESTROYER OF FLY EGGS AND YOUNG FLIES.	
2. KEEP FLIES OUT OF THE HOUSE.	
a. SCREENING.	
b. FLY-SWATTING.	
c. FLY-PAPERS.	
d. FLY-TRAPS.	
B. MOSQUITOES.	
DISTRIBUTION OF MALARIAL MOSQUITO.	
MOSQUITOES AND THE PANAMA CANAL.	
MOSQUITO-DESTRUCTION.	
1. ATTACK THEIR BREEDING-PLACES.	
2. SCREENING.	
C. RATS AND MICE.	
HABITS.	
DESTRUCTION.	
1. STARVE THEM.	
2. RENDER THE PREMISES RAT-PROOF.	
3. TRAPS.	
a. KINDS OF TRAPS.	
b. BAIT.	
c. HINTS ON SETTING TRAPS.	

CONTENTS

	PAGE
D. COCKROACHES AND OTHER VERMIN.	
ROACHES.	
ROACH-DESTRUCTION.	
BEDBUGS.	
HABITS.	
BEDBUG-DESTRUCTION.	
VI. BE CAREFUL WHERE YOU EXPECTORATE . . .	70
a. AT WORK.	
b. AT HOME.	
c. ON THE STREET.	
VII. BE CAREFUL WHEN YOU COUGH OR SNEEZE . .	71
VIII. KEEP YOUR FINGERS OUT OF YOUR MOUTH AND NOSE AND AWAY FROM YOUR EYES . . .	73
IX. WASH YOUR HANDS JUST BEFORE EATING . .	76
X. BRUSH YOUR TEETH TWICE A DAY	77
XI. AVOID CLOSE CONTACT WITH SICK PERSONS . .	78
XII. TAKE PROPER CARE OF ARTICLES USED BY SICK PEOPLE	79
DISINFECTION BY BOILING.	
CHEMICAL DISINFECTION.	
USE OF PUBLIC TELEPHONES.	
XIII. BE SURE OF THE PURITY AND QUALITY OF YOUR FOOD	81
A. THE MILK-SUPPLY.	
PASTEURIZATION.	
B. MEAT.	
DISEASES SPREAD BY INFECTED MEAT.	
DIRTY MARKETS.	
C. UNCOOKED FOOD.	
DISEASES SPREAD BY UNCOOKED FOOD.	
FOOD PREPARATION BY HEALTHY PERSONS ONLY.	
"DELICATESSEN" FOOD.	
FLIES AND FOOD.	

CONTENTS

XIV.	AVOID DUST	PAGE 86
	CONNECTION BETWEEN DUST AND GERMS.	
	VACUUM CLEANING.	
	DRY-SWEEPING WITH A BROOM.	
	WET-SWEEPING OF FLOORS.	
XV.	HOUSING	88
	CONNECTION BETWEEN HOME AND HEALTH.	
	RENTS.	
	ADVANTAGES OF HOUSE OVER TENEMENT.	
	GARDENS.	

PART II

RESISTING POWER; ANTITOXINS AND VACCINES

A.	RESISTING POWER	93
	COMPARISON OF BODY RESISTANCE WITH MILITARY ORGANIZATION.	
	KINDS OF RESISTING POWER.	
	1. THAT WHICH WE HAVE AT BIRTH.	
	2. THAT WHICH IS MANUFACTURED BY THE BODY DURING LIFE.	
	3. THAT WHICH IS TRANSFERRED TO THE BODY.	
B.	VACCINES AND ANTITOXINS	98
	VACCINES.	
	COMPARISON OF FORMATION AND ACTION OF VACCINES WITH MILITARY ORGANIZATION.	
	ANTITOXINS.	
	COMPARISON WITH MILITARY ORGANIZATION.	

PART III

SPECIAL PREVENTIVE MEASURES FOR CERTAIN DISEASES

I.	TUBERCULOSIS	105
	SOME IMPORTANT FACTS ABOUT THE DISEASE.	
	SPUTUM, THE PRINCIPAL SOURCE OF INFECTION.	

CONTENTS

PAGE

INFLUENCE OF AGE ON TUBERCULOSIS.

A. FROM BIRTH TO ONE YEAR.

B. FROM BIRTH TO FIFTEEN YEARS.

C. FROM FIFTEEN TO THIRTY YEARS.

FACTORS IN PRODUCTION OF TUBERCULOSIS.

PREVENTION OF TUBERCULOSIS.

A. CARE OF ADVANCED CASES.

PUBLIC HYGIENE.

PERSONAL HYGIENE.

B. EARLY DIAGNOSIS.

C. SPECIAL PREVENTIVE MEASURES FOR:

ADULTS.

INFANTS AND YOUNG CHILDREN.

II. PNEUMONIA 112

FOUR TYPES OF THE DISEASE.

PREVENTION OF PNEUMONIA.

1. KEEP UP BODY RESISTANCE.

2. AVOIDANCE OF EXPOSURE.

3. GENERAL PREVENTIVE MEASURES.

SERUM FOR TYPE ONE.

III. DIPHTHERIA 115

WHAT DIPHTHERIA IS.

CULTURES.

DIPHTHERIA-CARRIERS.

SHICK TEST.

PREVENTION OF DIPHTHERIA.

A. FIND OUT BY SHICK TEST WHO ARE SUSCEPTIBLE.

B. ANTITOXIN.

C. AVOIDANCE OF EXPOSURE.

IV. TYPHOID FEVER 121

WHAT TYPHOID FEVER IS.

HOW THE GERMS GET INTO THE BODY.

1. INFECTED DRINKING-WATER.

2. INFECTED MILK.

3. FLIES AND FOOD.

CONTENTS

PAGE

TYPHOID-CARRIERS.

HOW TO LOCATE CARRIERS—"WIDAL REACTION."

PREVENTION OF TYPHOID FEVER.

1. WASHING HANDS.
2. SCREENING AGAINST FLIES.
3. INVESTIGATION OF MILK-SUPPLY.
4. PREPARATION OF FOOD.
5. BOILING THE DRINKING-WATER.
6. DISPOSAL OF TYPHOID DISCHARGES.

VACCINATION.

V. SMALLPOX 127

SOME FACTS ABOUT THE DISEASE.

VACCINATION.

WHAT VACCINATION REALLY IS.

PROPER AGES AT WHICH TO VACCINATE.

FOUR STRIKING PROOFS OF THE VALUE OF
VACCINATION.

VACCINATION AND SKEPTICS.

VI. SCARLET FEVER 134

THE DISEASE SERIOUS BECAUSE OF COMPLI-
CATIONS.

PREVENTION OF SCARLET FEVER.

A. GENERAL PREVENTIVE MEASURES.

B. HOW SCARLET FEVER BEGINS.

C. } AVOIDANCE OF CONTACT.
D. }

E. CARE OF ARTICLES USED BY PATIENT.

F. CARE OF DISCHARGES.

G. LENGTH OF TIME THAT SCARLET FEVER IS
CONTAGIOUS.

VII. MEASLES 136

SOME FACTS ABOUT THE DISEASE.

PREVENTION OF MEASLES.

A. AVOIDANCE OF CONTACT.

B. AN EARLY SIGN OF MEASLES.

C. EARLY QUARANTINE.

D. CARE OF DISCHARGES.

CONTENTS

	PAGE
VIII. CHICKEN-POX	138
THE DISEASE IMPORTANT BECAUSE OFTEN CON- FUSED WITH SMALLPOX.	
PREVENTION OF CHICKEN-POX.	
IX. WHOOPING-COUGH	139
AGE AND WHOOPING-COUGH.	
SERIOUSNESS OF THE DISEASE.	
PREVENTION OF WHOOPING-COUGH.	
A. GENERAL PREVENTIVE MEASURES.	
B. AVOIDANCE OF CONTACT.	
C. VACCINATION.	
X. INFANTILE PARALYSIS	142
WHAT INFANTILE PARALYSIS IS.	
AGE AND INFANTILE PARALYSIS.	
CARRIERS.	
THE FIRST SIGNS OF THE DISEASE.	
PREVENTION OF INFANTILE PARALYSIS.	
A. PROMPT NOTIFICATION OF PHYSICIAN.	
B. PROTECTION AGAINST FLIES.	
C. } AVOIDANCE OF CONTACT.	
D. }	
E. GENERAL MEASURES.	
F. KISSING FORBIDDEN.	
G. POSTPONE VISITS OF RELATIVES.	
XI. COMMON "COLDS"	145
DISEASES WHICH MAY DEVELOP FROM COLDS.	
HOW WE CATCH COLD.	
PREVENTION OF COLDS.	
A. PERSONAL HYGIENE.	
MAINTAINING BODY RESISTANCE.	
1. AVOID SUDDEN CHANGES OF TEMPERATURE.	
2. AVOID CHILLING OF THE BODY.	
3. REMOVAL OF ADENOIDS.	
4. AVOIDANCE OF DUST.	
5. TEMPERATURE OF LIVING-APARTMENTS.	
6. WINDOWS OPEN AT NIGHT.	
7. SKIN-TRAINING.	

CONTENTS

	PAGE
B. PUBLIC HYGIENE.	
1. AVOID CROWDED PLACES.	
2. AVOIDANCE OF CONTACT.	
3. CARE OF DISCHARGES.	
CONCERNING DRAUGHTS.	
XII. GRIP	148
ITS SPREAD AND CONTROL ESSENTIALLY SAME AS IN CASE OF COMMON "COLDS."	
XIII. MALARIA	149
DISTRIBUTION OF MALARIA.	
HOW MALARIA IS SPREAD.	
PREVENTION OF MALARIA.	
1. DESTRUCTION OF THE MOSQUITOES.	
2. AVOID MOSQUITO-BITES.	
3. QUININE.	
XIV. SUMMER DIARRHEA	150
INFLUENCE OF SEASONS.	
IMPORTANCE OF SUMMER DIARRHEA.	
PREVENTION OF SUMMER DIARRHEA.	
1. PROTECTION OF FOOD FROM FLIES.	
2. SELECTION OF RESTAURANT OR MARKET.	
3. BREAST-FEEDING.	
4. THE BOTTLE.	
5. GENERAL HOUSEHOLD CLEANLINESS.	
XV. LOCKJAW	153
HOW LOCKJAW ORIGINATES.	
PREVENTION OF LOCKJAW.	
1. CARE OF PUNCTURED WOUNDS.	
2. DISINFECTION (CAUTERIZING).	
3. TETANUS ANTITOXIN.	
XVI. RABIES (HYDROPHOBIA)	155
CAUSE OF HYDROPHOBIA.	
THE PASTEUR TREATMENT.	
XVII. SPINAL MENINGITIS	155
FLEXNER'S SERUM.	

CONTENTS

	PAGE
XVIII. TAPEWORMS	156
THREE KINDS OF TAPEWORMS.	
PREVENTION OF TAPEWORMS. .	
1. CARE OF CATTLE AND SWINE.	
2. THOROUGH COOKING OF BEEF AND PORK.	
XIX. TRICHINA	157
CONNECTION BETWEEN RATS AND TRICHINA.	
PREVENTION OF TRICHINOSIS.	
1. CONTROL OF RATS.	
2. THOROUGH COOKING OF PORK.	
XX. INFECTED WOUNDS (BLOOD POISON)	157
CONNECTION BETWEEN GERMS AND INFECTED	
WOUNDS.	
SERIOUSNESS OF INFECTION.	
PREVALENCE OF INFECTED WOUNDS.	
PREVENTION OF BLOOD POISON.	
1. CLEANSE WITH GASOLENE.	
2. APPLY TINCTURE OF IODINE.	
3. } THE DRESSING.	
4. }	
XXI. COMMON SKIN DISEASES	161
SCABIES ("THE ITCH")—LICE—RINGWORM.	
PREVENTIVE MEASURES.	

PART IV

CHRONIC DISEASES OF ADULT LIFE

PUBLIC HYGIENE—ITS MEANING.	167
INDIVIDUAL HYGIENE—ITS MEANING.	168
COMMON "TROUBLES" OF SUPPOSEDLY HEALTHY PER-	
SONS.	
GENERAL PREVENTIVE MEASURES.	
A. PERIODICAL PHYSICAL EXAMINATIONS.	
THE REASONS FOR PHYSICAL EXAMINATIONS.	
FREQUENCY OF PHYSICAL EXAMINATIONS.	

CONTENTS

	PAGE
THE ESSENTIALS OF A THOROUGH EXAMINATION.	
B. PERSONAL HYGIENE.	
C. AVOIDANCE OF POISONS.	
1. ALCOHOL, TEA, COFFEE, AND TOBACCO.	
2. CONSTIPATION.	
3. CHRONIC INFECTIONS.	
D. AVOIDANCE OF MENTAL FATIGUE.	
INFLUENCE OF MODERN LIVING CONDITIONS.	

PART V

DISEASES WHICH ARE LARGELY PREVENT- ABLE BUT NOT COMMUNICABLE

I.	CANCER	187
	A FEW FACTS ABOUT CANCER.	
	WHAT CANCER IS.	
	PARTS OF THE BODY MOST FREQUENTLY AFFECTED.	
	HOW CANCER BEGINS.	
	DANGER SIGNALS.	
	PREVENTION AND CURE OF CANCER.	
	1. ANNUAL PHYSICAL EXAMINATION.	
	2. AVOIDANCE OF PERSISTENT IRRITATION.	
	3. PROMPT ACTION AT FIRST SIGN OF DANGER.	
	4. OPERATION.	
	5. X-RAYS AND RADIUM.	
	CANCER "CURES."	
	THE "LAST WORD" ON CANCER.	
II.	CONSTIPATION	194
	NORMAL DIGESTION.	
	WHAT CONSTIPATION IS.	
	SOME RESULTS OF CONSTIPATION.	
	PREVENTION OF CONSTIPATION.	
	A. DRINK WATER FREELY.	

CONTENTS

PAGE

B. INFLUENCE OF FOOD.

1. PROPER FOOD THE BEST "BOWEL-REGULATOR."

2. FOODS HAVING A LAXATIVE ACTION.

3. CONSTIPATING FOODS.

C. EXERCISE.

D. REGULARITY.

ADVICE AGAINST USE OF DRUGS.

III. OBESITY 198

HOW TO TELL IF YOU ARE OVERWEIGHT.

RESULTS OF OVERWEIGHT OR OBESITY.

WHY PEOPLE GET FAT.

PREVENTION OF OBESITY.

1. WEIGH YOURSELF OCCASIONALLY.

2. INFLUENCE OF FOOD.

3. EXERCISE.

IV. DIABETES 201

RELATION OF THE DISEASE TO OBESITY.

THE "ALLEN" TREATMENT.

PREVENTION OF DIABETES.

1. PERIODICAL PHYSICAL EXAMINATION.

2. DIET FOR PREDISPOSED PERSONS.

ILLUSTRATIONS

	PAGE
THE INSTRUMENT USED TO DETERMINE BLOOD PRES- SURE <i>Frontispiece</i>	
ALL BACTERIA ARE MAGNIFIED ABOUT TEN THOUSAND TIMES	4
SIMPLE FOODS ARE NOURISHING	7
TYPES OF INDIGESTIBLE FOODS	8
FRYING, THE WORST WAY TO COOK FOOD	9
THESE TEETH CAN CHEW FOOD PROPERLY	10
WHAT CAN YOU EXPECT FROM SUCH TEETH AS THESE? .	10
THE AMOUNT OF WATER YOU SHOULD DRINK EVERY DAY	11
OUTDOOR OCCUPATIONS ARE HEALTHFUL BECAUSE OF FRESH AIR AND EXERCISE	12
PROPER POSITION OF BEDROOM WINDOW AT NIGHT . .	13
SLEEPING-PORCH	14
WINDOW TENT	14
A SIMPLE AND INEXPENSIVE VENTILATOR	15
PROPER TEMPERATURES	16
DIAGRAM ILLUSTRATING HOUSEHOLD HUMIDITY CONDI- TIONS	17
A PRACTICAL WAY OF MOISTENING THE AIR OF A ROOM .	18
EXERCISE FOR A FEW MINUTES ON ARISING	19
THE IMPROPER AND PROPER WAY TO WALK	20
A POOR WAY TO SPEND THE ENTIRE NOON HOUR . . .	21
BRAIN-WORKERS NEED EXERCISE MORE THAN THOSE PHYSICALLY ENGAGED	21

ILLUSTRATIONS

	PAGE
SHADED PORTION OF CLOCK SHOWS PROPER HOURS FOR SLEEP	22
THIS ROOM IS GETTING FRESH AIR, WITH THE BED PROPERLY PLACED	23
TUBING AND SPRAY FOR SHOWER-BATH	24
SIX O'CLOCK EVERY MORNING	27
FOUR STIMULANTS THAT SHOULD BE USED IN MODERATION IF AT ALL	29
POROUS OR MESH UNDERWEAR	31
A VALUABLE AID IN THE PREVENTION OF COLDS	34
THE COMMON TOWEL MUST GO; IT IS A DISEASE-SPREADER AND IN MOST CASES IS AGAINST THE LAW	37
BOTH OF THESE METHODS ARE SANITARY	38
"COME ON, BILL; GIVE ME AND THE KID A CHANCE"	40
HOME-MADE SANITARY DRINKING-CUP	41
SANITARY DRINKING-FOUNTAIN; AN IDEAL WAY TO DRINK WATER	42
DIAGRAM SHOWING HOW CITIES AND TOWNS CAUSE POLLUTION OF A STREAM	43
THE FAMILY WATER-SUPPLY	45
GOOD AND BAD WELLS	46
THE COMMON HOUSE FLY IS RESPONSIBLE FOR THE SPREAD OF MORE DISEASE THAN ANY OTHER INSECT	48
A MANURE PILE IN THE CENTER OF A LARGE CITY; AN IDEAL BREEDING-PLACE FOR FLIES	49
THOUSANDS OF FLIES WERE FEEDING UPON THE CONTENTS OF THIS CAN	50
LIFE-HISTORY OF A HOUSE FLY	51
WHAT IS HAPPENING EVERY DAY DURING FLY SEASON	53
TWO SANITARY METHODS OF GARBAGE DISPOSAL	55
FLY-SWATTER	57
ONE OF THE BEST KINDS OF FLY-TRAPS	57
THE CAUSE OF THE SPREAD OF MALARIA	59

ILLUSTRATIONS

	PAGE
THE SHADED PORTIONS OF THIS MAP OF THE UNITED STATES SHOW WHERE MALARIA STILL EXISTS	60
AN IDEAL BREEDING-PLACE FOR BOTH MOSQUITOES AND FLIES	61
MOSQUITO-BREEDING	62
A SPREADER OF DISEASE AND THE BEST KIND OF RAT- TRAP	64
A CHEAP MOUSE-TRAP THAT "GETS THEM"	66
THE WRONG WAY TO COUGH—THE RIGHT WAY	72
THE WRONG WAY TO SNEEZE—THE RIGHT WAY	74
THIS BOY IS WILLING TO TAKE A LITTLE TROUBLE TO KEEP CLEAN	76
ONE OF THE BEST INVESTMENTS YOU CAN MAKE FOR TWENTY-FIVE CENTS	77
THE MODERN, SANITARY WAY	82
THE OLD-FASHIONED, UNSANITARY WAY	82
THE OLD-FASHIONED, UNSANITARY WAY	85
A MODERN, SANITARY METHOD	85
THESE TWO BACK YARDS ARE ACTUALLY NEXT DOOR TO EACH OTHER	87
SIX-ROOM COTTAGE WITH IMPROVEMENTS	89
FIFTEEN DIFFERENT FAMILIES LIVE IN THIS COURT	89
THESE ROD-LIKE GERMS ARE THE CAUSE OF CONSUMPTION	94
WHEN A CONSUMPTIVE EXPECTORATES	109
THESE GERMS, IN PAIRS, CAUSE PNEUMONIA	113
DEATHS FROM PNEUMONIA, BRONCHITIS, COLDS, AND GRIP IN NEW YORK CITY	114
CULTURE TUBES	116
DIPHThERIA ANTITOXIN	120
TYPHOID GERMS, TEN THOUSAND TIMES ACTUAL SIZE	122
TYPHOID VACCINE	126
SMALLPOX, OR A SIMPLE, HARMLESS VACCINATION MARK	129
GLASS TUBES CONTAINING VACCINE	131

ILLUSTRATIONS

	PAGE
FEEDING-BOTTLES	152
GERMS OF LOCKJAW	153
THE VITAL PART IN THE PREVENTION OF BLOOD POISON .	161
THE DISEASES OF ADULT LIFE ARE OFTEN UNSUSPECTED UNTIL TOO LATE	169
STETHOSCOPE, USED IN TESTING THE HEART AND LUNGS .	172
WATCH, FOR TAKING THE PULSE	174
THERMOMETER, USED TO DETERMINE THE PRESENCE OF FEVER	176
OUTFIT FOR TESTING THE URINE	178
FOODS OF VALUE IN THE PREVENTION OF CONSTIPATION .	181

INTRODUCTION

WE have heard so much about "safety first" lately that the term has become a byword. Back of the movement, however, is the idea of prevention. "Safety first" does not mean taking care of an injury after it has occurred; it means teaching people to be cautious and at the same time to guard machinery and tools so that the accident never takes place—it means PREVENTION.

If it is important to prevent accidents, it is even more important to prevent sickness. Industrial workers lose more time as a result of injuries and illness than from any other cause. It has been estimated that each of the thirty million persons employed in industry in this country loses on an average of nine days a year because of sickness. Put into figures, this means that there is an annual loss in the United States equivalent to nearly 1,000,000 years of work. This represents a loss to the workers of the country of something like \$800,000,000 and a loss to industry of a proportionately large amount in products that are never manufactured. Suppose this loss of time could be

INTRODUCTION

reduced to four or five days a year; think of the saving that would result, not only in human suffering, but in money as well. You ask, is it possible to do this. It is. Simply by applying the knowledge we already possess, more than half the disease in the world might be prevented. That is the idea of this book—to give you certain proven facts, not theories, which, if made use of, will enable you to really prevent a great deal of sickness. All disease is not preventable, but so much of it is that it means comfort and money saved if we will take advantage of what is known about this important subject of sickness prevention.

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PART I
COMMUNICABLE DISEASES

*“In the health of the people lies the wealth of the
nation”*

—GLADSTONE

HOW TO PREVENT SICKNESS

What Contagious and Infectious Diseases Are

DISEASES which are caught by simply going near a person (contagious diseases, such as scarlet fever and smallpox), those that are contracted by lack of care when in contact with the sick person (infectious diseases, such as consumption and typhoid fever), and those diseases such as "the itch" and ringworm, are ALL communicable. It means that they may be passed on from one person to another.

Most of the communicable diseases, though not all, are caused by germs. If you have some general idea about germs, such as their size, their habits, and what they look like, you will understand more clearly what follows and be able to see the reasons for the statements made.

What Germs Are.—Germs are tiny plants called bacteria or microbes, and are the smallest living things that are known.

HOW TO PREVENT SICKNESS

Where Found.—Except at the polar regions, in the middle of the ocean, and on the tops of high mountains, germs are present everywhere. They are on our bodies, our clothes, our food—in fact, you cannot touch anything that is free from germs. The reason that most of us are not sick all of the time is



These germs, in bunches, cause abscesses and carbuncles.



These chains of germs cause blood poison.



Germs of this sort cause milk to turn sour.



Germs of relapsing fever.

ALL BACTERIA ARE MAGNIFIED ABOUT TEN THOUSAND TIMES

that not all of these germs cause disease, and also that most of us are strong enough to resist the few that are taken into the system.

Size.—Bacteria are so small that millions of them could swim in a drop of water without even crowding one another. It is quite impossible to see them with the naked eye, and not until powerful microscopes were invented could they be seen at all. Even then, when magnified thousands of times, they look like the dots and dashes on this page.

Shapes.—The common germs are round like balls or straight like short rods. Certain other forms are curved like a corkscrew. Germs are rarely seen alone, but grow in bunches like grapes, or in chains like strings of sausages. Some always grow

COMMUNICABLE DISEASES

in pairs, while others, when seen together under the microscope, look like jackstraws.

Habits.—Bacteria multiply by simply breaking apart. Shortly there are two full-sized bacteria in place of the one. From this it can be seen how millions of germs may form in a very quick time. The action of cold stops the growth of bacteria, but they begin to grow again as soon as they become warm. That is the reason why we use ice-boxes in summer, as food “spoils” when certain bacteria grow in it. On the other hand, **BOILING KILLS GERMS**, and this is the best and cheapest way to get rid of disease germs. Doctors and nurses boil their instruments and dressings so as to kill the germs on them; after that they are not handled until ready for use. One of the principal reasons why food is boiled when preparing it for canning is to kill the bacteria; it is then put into air-tight cans so that no more germs can reach it.

“Catching” Diseases.—Certain troubles, such as indigestion, Bright’s disease, and diabetes, have nothing whatever to do with germs. However, it is said that half the people who are sick catch their diseases from other sick persons. “Catching” a disease means taking the living germs of that disease into the body. These germs leave the sick person’s body and become planted in the body of the well person. Disease germs may leave a sick person in four different ways—with the solids and liquids which pass out of the nose, the mouth, the

HOW TO PREVENT SICKNESS

bowels, and the bladder. If every sick person would guard these four gateways of the body and destroy all the germs that escape through them, there would soon be no more germ diseases.

Each "catching" disease has its own kind of germ, just as every tree, flower, or fruit has its own kind of seed. For this reason, it would be just as impossible for the germ of typhoid fever to produce pneumonia as it would be to get oranges if we planted cherries.

General Preventive Measures

There are certain precautions we can take concerning our habits of living, both at work and at home, which will help to protect against communicable disease in general. The proper care of our homes, what to do when we are sick or near others who are sick, and finally care in our personal habits are for the most part matters of common sense. That we may have these precautions clearly in mind, however, let us discuss them in detail, as they all have an important bearing in preventing the spread of disease.

I. KEEP THE BODY IN THE BEST POSSIBLE PHYSICAL CONDITION.

This is by far the most important precaution of all. If you are in good, robust health, you will be better able to resist disease even though you are brought

COMMUNICABLE DISEASES

into close contact with it. As a general rule it is the physical weakling who succumbs most easily to disease. Perhaps you have wondered why doctors and nurses, who are exposed a great deal to disease, so seldom become ill. They do not lead charmed lives by any means, for sometimes even they are taken sick, although it is the exception and not the rule. The reason is that they know by practical experience and observation the great importance of keeping themselves "fit." It costs practically nothing to do this and it pays bigger dividends than anything else you can do. Good health is dependent upon eight simple rules, as follows:

Rule 1. EAT THE PROPER AMOUNT OF GOOD, NOURISHING FOOD.—This is perhaps the most important rule of all, but the one most disregarded.



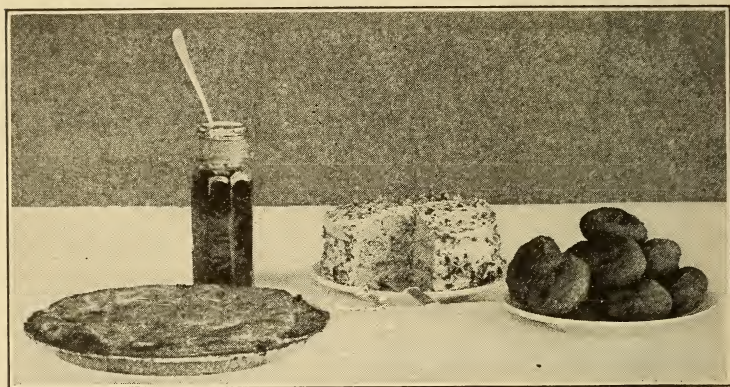
SIMPLE FOODS ARE NOURISHING

Some people eat too little of the proper food rather than too much, but there is little doubt that most of us who have all the food we desire eat consider-

HOW TO PREVENT SICKNESS

ably more than is good for us. Remember that "strength comes from the kitchen and not from the drug-store."

Good food is not necessarily fancy food. Simple foods are the best, as they cause less effort on the



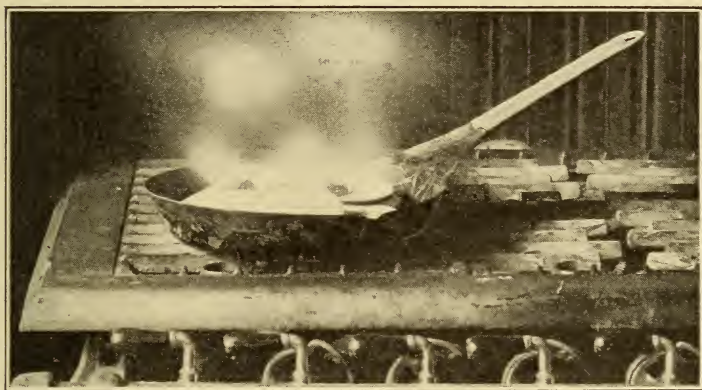
TYPES OF INDIGESTIBLE FOODS

part of the stomach in the process of digestion. Milk, butter, meat, eggs, fish, bread, cereals, fruits, and vegetables of all kinds are examples of simple foods. Milk is generally regarded as the most valuable single food, as it contains all the elements necessary to existence. However, a healthy adult could not live on milk alone, indefinitely, as even good, rich milk is almost nine-tenths water.

By rich and indigestible articles we mean cake, pastry of all kinds, hot bread, pickles, and most fried foods. These, when eaten, should be taken

COMMUNICABLE DISEASES

sparingly if we do not wish to overtax the digestive organs. In cooking, bear in mind that frying renders the food less digestible than any other form of



FRYING, THE WORST WAY TO COOK FOOD

cooking. On this account broiling, baking, and boiling should be employed in preference whenever possible. Apples, oranges, lettuce, figs, prunes, cereals, spinach, tomatoes, rhubarb, Graham and rye bread and cabbage are all known to be of value

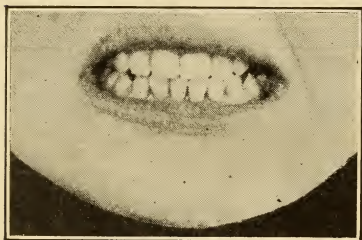
**MEAT 3 × A DAY + NO EXERCISE =
BRIGHT'S DISEASE [IN A FEW YEARS]**

in the prevention of constipation, and may be regarded as desirable articles of food for this reason.

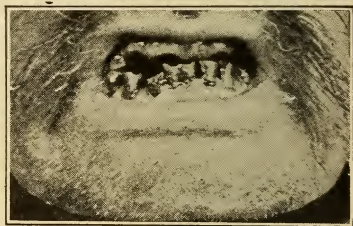
HOW TO PREVENT SICKNESS

As a general rule meat should not be eaten more than once a day; a disregard of this may lead in time to Bright's disease and other troubles.

Some people, through habit, bolt their food, while others fail to chew it thoroughly because it hurts their teeth to do so. The result in either case,



THESE TEETH CAN CHEW FOOD
PROPERLY



WHAT CAN YOU EXPECT FROM
SUCH TEETH AS THESE?

sooner or later, is impaired digestion. If your teeth are in bad shape, have them put in proper condition by a competent dentist for the sake of your digestion, if for no other reason. Thorough mastication is second only in importance to the choice of the food itself.

Going without breakfast is not a good thing and may cause headache and faintness. Do not eat between meals; this upsets nature's plans and causes confusion in the stomach. A "lunch" just before going to bed is unwise, as it deprives the stomach of about the only rest that it gets. It is very much the same as if you yourself tried to work twenty-four hours out of the twenty-four.

COMMUNICABLE DISEASES

The cold lunch at noon, except on hot summer days, is not a good idea. If you take your lunch to work, buy a bowl of hot soup or a cup of cocoa to drink with it. Or you can very easily make a cup of hot malted milk with malted milk powder obtained from the druggist; this is quite nourishing. Soup or other hot liquids placed in a vacuum bottle on leaving home in the morning will keep hot until lunch-time. Such bottles may be ob-



THE AMOUNT OF WATER YOU SHOULD DRINK EVERY DAY

tained in one-pint sizes for a dollar, and with care will last indefinitely. At any rate, see that you eat or drink something warm at noontime.

It is not a good plan to eat a meal following heavy exertion; the blood of the body is at that time largely in the muscles, in which case the stomach is not prepared to digest the food properly. Better take a short nap or at least rest fifteen

HOW TO PREVENT SICKNESS

or twenty minutes to allow adjustment of the circulation before eating.

Drink at least six glasses of water a day in winter and eight in summer. This means a glass at each



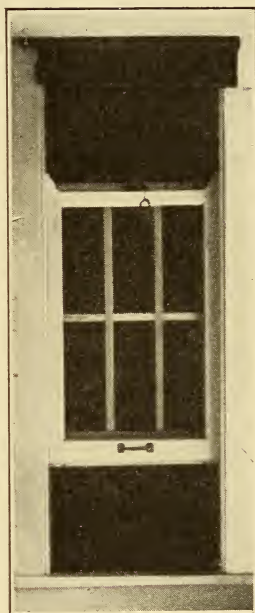
OUTDOOR OCCUPATIONS ARE HEALTHFUL BECAUSE OF FRESH AIR
AND EXERCISE

meal, one or two between meals, and one at bedtime. It is not harmful, as some think, to drink water with your meals, provided food is not washed down with the water. If no food is in your mouth when you drink no harm will result.

Rule 2. BREATHE ALL THE FRESH AIR YOU CAN AT ALL TIMES.—Next to proper food, pure, fresh air is most essential to good health. At your work-place, the proper air conditions are maintained by ventilating systems. When not at work it is up to you to see that you get fresh air. Get out into the open all you can. As a rule, the outdoor

COMMUNICABLE DISEASES

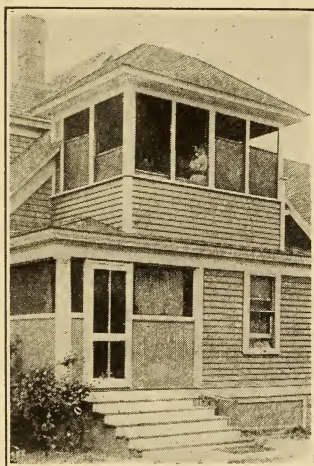
worker is the most healthy in the long run. This is seen in the case of farmers and fishermen. However, the inside work has to be done, and it is necessary for most of us to be indoors in the day-time. But it is within our power to be in the open air the rest of the time, or practically so if we sleep with our windows wide open. It used to be thought that night air was injurious and that malaria and other diseases came in this way. We now know that the bite of a certain mosquito is the sole cause of malaria, and that the "night air" superstition is without any foundation whatever. So before going to bed open the windows top and bottom, except in the severest weather, and even then have one window open at least a foot. Better still is sleeping in the open. This is an excellent practice for any one, no matter how healthy. It is accomplished in a practical way, winter and summer, by the use of a window tent, several makes of which are on the market and which cost about five dollars. By the use of a window tent your head is



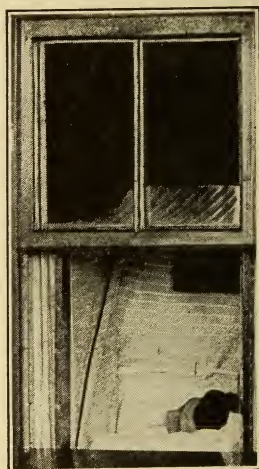
PROPER POSITION OF
BEDROOM WINDOW AT
NIGHT

HOW TO PREVENT SICKNESS

really outdoors, while your body is indoors. If you own your home and happen to be "handy" with tools, a small sleeping-porch may be built, if you prefer, at a cost of less than fifty dollars. The win-



SLEEPING-PORCH



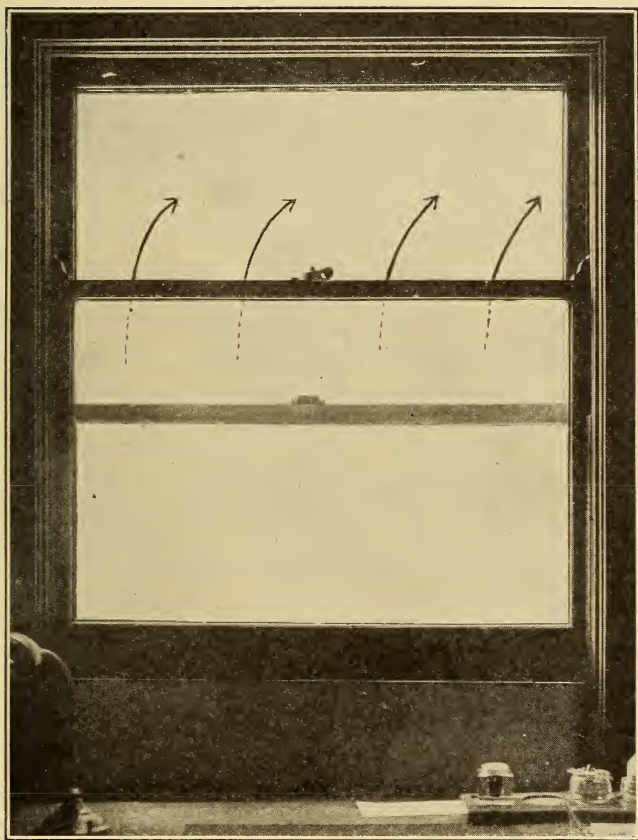
WINDOW TENT

dow tent, however, answers every purpose and has some advantages over the sleeping-porch.

A thin board, twelve inches wide, fitted into the bottom of the window-frame and the window then opened about eight inches, makes an excellent and inexpensive ventilator. The fresh air comes in between the two windows and is directed upward without producing a draught.

The air in poorly ventilated buildings where great numbers of people gather for a considerable time is

COMMUNICABLE DISEASES



A SIMPLE AND INEXPENSIVE VENTILATOR

Arrows indicate direction of air current.

usually bad, because it passes repeatedly from one pair of lungs to another.

Some people make it a habit every day to slowly inhale to the full chest capacity, hold for four or

HOW TO PREVENT SICKNESS

five seconds, and then exhale. This is repeated fifteen or twenty times and is always done outdoors and where the air is pure. It is an excellent habit,

as it forces the air into the furthermost portions of the lungs that with the ordinary quiet breathing are insufficiently ventilated. By so doing, the lungs are rendered much more able to resist disease, especially tuberculosis.

In winter, when it may be regulated, the proper temperature of the air in a room where people are sitting is 70° . When you are engaged in active work or moving about it should not rise above 68° , except under unusual conditions.

Almost as important as the temperature is the moisture in the air. This matter takes care of itself in summer, but in winter, in artificially heated buildings, the air when heated is able to take up much more moisture than is possible at the lower temperatures.

For example, let us suppose a cubic foot of air is taken from outdoors at a temperature of 25° F. If this air contains 75 per cent. (or three-fourths) of the amount of moisture it can possibly hold, it will, after passing through a furnace and being heated to 70° F., contain only 18 per cent., provided no water has been added. This low per-



PROPER TEMPERATURES.
FOR ACTIVE
WORK— 68° .
FOR QUIET
WORK— 70°

COMMUNICABLE DISEASES

centage of moisture is noticed by a dry feeling of the skin and by the fact that plants tend to dry up and die. The moisture may be partly replaced by keeping water constantly boiling in the living apartments or by placing shallow pans of water on

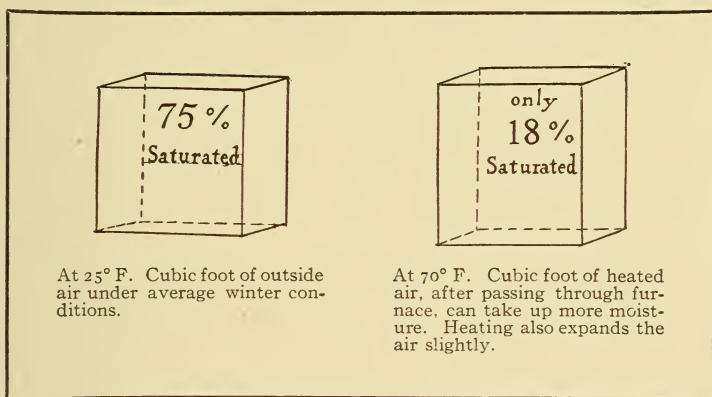


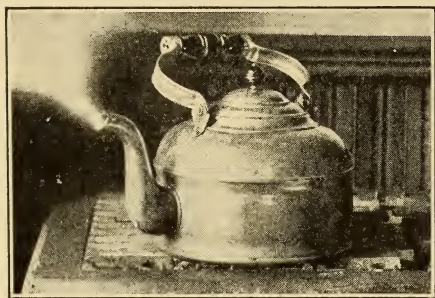
DIAGRAM ILLUSTRATING HOUSEHOLD HUMIDITY CONDITIONS

the radiators or hot-air registers. In winter, if frost or moisture is seen on the windows you may be sure that there is sufficient moisture in the air; this is an easy and simple guide to go by. So it will be seen that the amount of moisture that air will absorb depends on the temperature of the air. The warmer the air, the more moisture it will hold.

To promote comfort and health, the air we breathe should contain from 50 to 75 per cent. of moisture. It is possible for air to contain too much

HOW TO PREVENT SICKNESS

moisture; in fact, an excessive amount, or what is termed "high humidity," is what causes us to feel so uncomfortable on the "sticky" days in



A PRACTICAL WAY OF MOISTENING THE
AIR OF A ROOM

summer; also, too much moisture in winter is responsible for the "raw," bitter cold which is so penetrating.

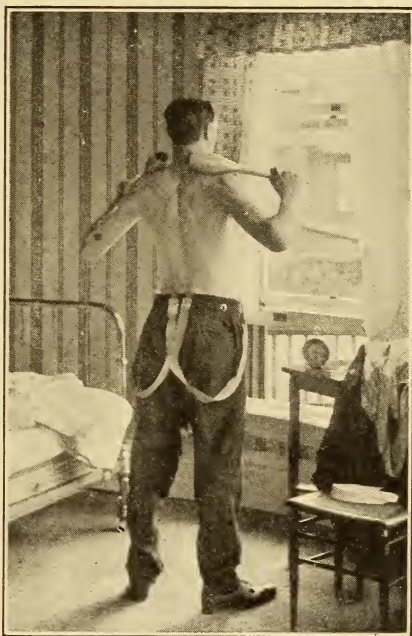
Rule 3. GET SOME FORM OF EXERCISE EVERY DAY.—We all know how quickly a person loses strength

when confined to bed for a long period, even though not really sick, say, for instance, with a broken leg. There is only one reason for this—lack of that exercise which the muscles have been accustomed to.

Moderate, sensible exercise is absolutely necessary to keep the muscles in good condition, to help throw off the body-poisons and to produce that feeling of "snap" and vigor and appetite that all those in good health experience. This does not mean that it is necessary to run five or ten miles every day, or to play football, or anything of the sort. What it does mean is that morning exercises, on arising, for two or three minutes before the windows are closed, are a good thing; that walking to and from

COMMUNICABLE DISEASES

your work, whenever possible, is beneficial. If you live so far from your work that you are unable to do this, there is nothing to prevent your walking part way and riding the rest. Because walking is the most common and cheapest form of exercise and within the reach of all, its value is apt to be held too lightly. The chief good of walking is that it must be done in the open air, and because of this it might well be considered the ideal form of exercise. When walking, do so with a full stride and swing the arms; it will do you very much more good than if you take it slowly and quietly.



EXERCISE FOR A FEW MINUTES ON
ARISING

Never exercise to the point of exhaustion, as this takes away all the benefit gained. Stop just short of fatigue and you will be surprised how much you can do or how much farther you can walk

HOW TO PREVENT SICKNESS

from week to week as the muscles become used to the exercise. Do not exercise immediately after a full meal, as it interferes with digestion; this applies particularly to swimming.

It takes no one much more than twenty minutes to eat lunch, and instead of sitting inside for the



THE IMPROPER AND PROPER WAY TO WALK

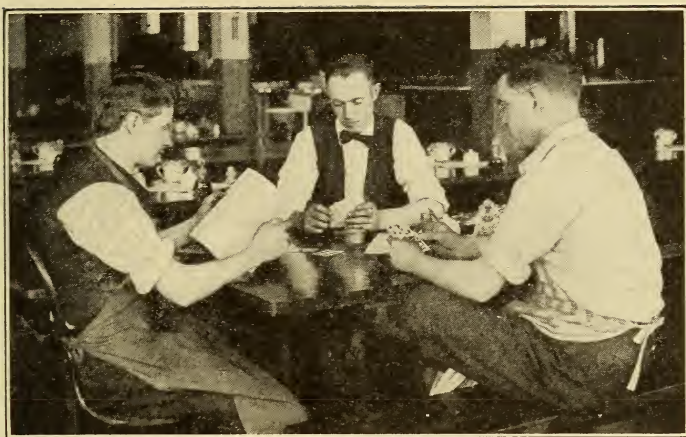
The boy on the right is deriving benefit from his exercise.

rest of the noon hour, reading, smoking, or playing cards, get out into the fresh air.

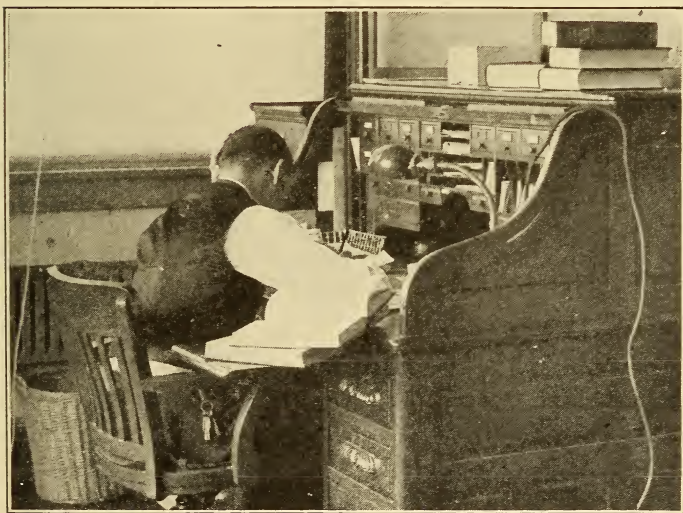
In summer you will have time for some baseball or "catch" or a game of quoits, and in winter you can take a walk, if

nothing else. Saturday afternoons and evenings you may be able to skate; this is an excellent form of exercise. Swimming and open-air bathing are good if you do not remain in the water more than fifteen or twenty minutes, as they combine exercise, bathing, and breathing of fresh air.

While every one of us needs exercise, it is of special importance in the case of brain-workers. Here there is an increased supply of blood in the brain and it is quite important that the circulation



A POOR WAY TO SPEND THE ENTIRE NOON HOUR

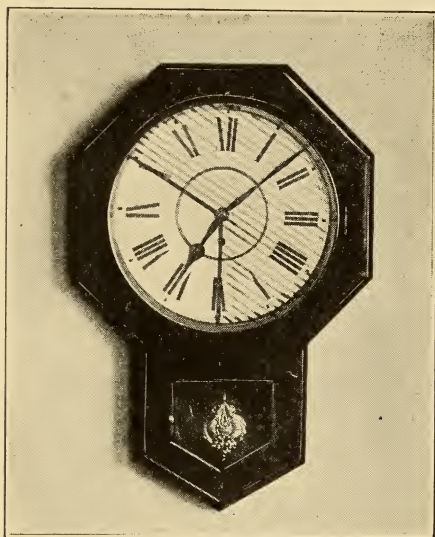


BRAIN-WORKERS NEED EXERCISE MORE THAN THOSE PHYSICALLY
ENGAGED

HOW TO PREVENT SICKNESS

be adjusted. Nothing accomplishes this so well as muscular activity.

The improved circulation of the blood following exercise will repay you for your trouble many times in the general benefit to your health. Try it for a month and notice the difference.



SHADED PORTION OF CLOCK SHOWS
PROPER HOURS FOR SLEEP

Rule 4. GET SUFFICIENT SLEEP UNDER THE PROPER CONDITIONS.—You are forced by nature to sleep, whether you want to or not. If you go without sleep one, two, or three nights, you will fall asleep at your work; you cannot

prevent this. However, by running short on sleep month in and month out, say by sleeping five or six hours a night, you will very materially affect your general health. Dances, parties, and other forms of amusement that keep a person up until after midnight every night in the week are harmful. Do not think that you can sleep almost all day Sunday and make up for the late nights

COMMUNICABLE DISEASES

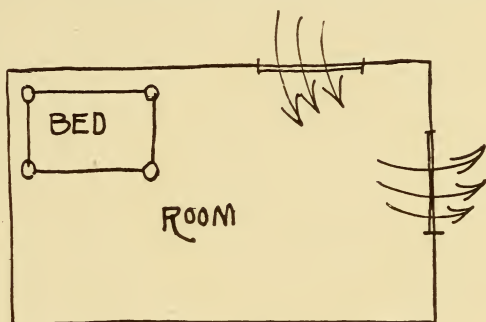
of the week before. It does not work out that way.

The average healthy adult requires at least eight hours of sleep in the twenty-four to keep in the best condition. Perhaps you are one of those exceptions that

have managed on five or six hours for years and seem to thrive on it. If so, you certainly are an exception, as most people would “run down” on this

amount of sleep. Every day-worker should make it a point to be in bed by ten o'clock at least five nights of the week.

The bedroom should be quiet and well-ventilated. Never permit yourself to “sleep cold”; this does not mean, however, that you should pile on covers until you are weighted down with them, as they will only disturb your sleep and make you restless. The bed, if possible, should be in that part of the room where a draught will not blow over you. This applies especially in summer, for at that season you have few covers on, if any, and a draught can do the most harm. A hard mattress is better

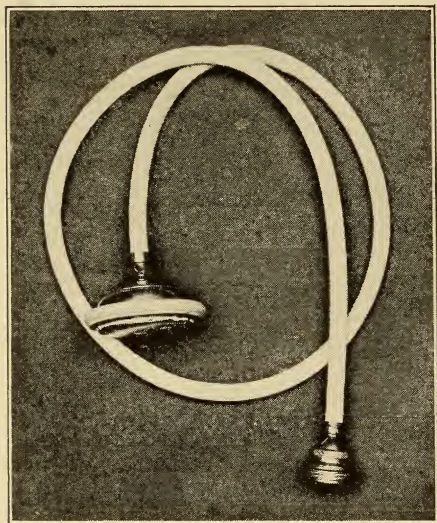


THIS ROOM IS GETTING FRESH AIR, WITH
THE BED PROPERLY PLACED

HOW TO PREVENT SICKNESS

than a soft one, and feather beds should not be in any modern home.

Rule 5. KEEP THE BODY CLEAN AT ALL TIMES.—Strange as it may seem, breathing is carried on



TUBING AND SPRAY FOR SHOWER-BATH

by the skin as well as by the lungs, although, of course, to a less extent. Also, like the kidneys, the skin assists in throwing off waste matter. The skin is unable to properly perform these functions if the pores are clogged up with dirt and grease. It is known that if a coat of varnish were applied to the entire body the person would soon die. When we fail to keep the skin clean, healthy, and active, bad results follow in proportion to the neglect.

To keep the skin in proper condition one should take a hot bath with the free use of soap twice a week in winter. In summer, when perspiration is free, a bath every day is necessary. Aside from the benefit derived from bathing, a neglect

COMMUNICABLE DISEASES

of this matter makes it disagreeable for those near by.

One of the great preventives of winter ills, such as colds and sore throats, is cool bathing every morning, followed by a vigorous friction rub with a rough towel. This does not mean jumping into a tubful of ice-cold water; this is quite unnecessary, and there are few people who can stand the resulting shock. But a cool sponge bath of the neck and shoulders and chest produces in most people, after the rub-down, a comfortable feeling of warmth. The skin is thus accustomed to sudden changes in temperature and the likelihood of catching cold is much reduced. Still better, and for use every morning both summer and winter, is the shower-bath. The water may be tepid to start, and then changed to cold, or may be cold throughout. No expensive installation is necessary, because quite as invigorating and beneficial an effect may be obtained by the use of rubber tubing and spray attached to the bath-tub faucet. This may be purchased at any drug-store for about one dollar and has an advantage over the overhead shower in not wetting the hair.

For most people, the hot bath is best taken at night before retiring; it is cleansing and soothing. Heat opens the pores of the skin and brings the blood to the surface, greatly increasing the liability of "catching cold" on exposure; this cannot happen if you go immediately to bed. Take the cool

HOW TO PREVENT SICKNESS

bath in the morning; it is stimulating and acts as a tonic to the entire body.

Remember that if your skin is not kept clean the pores become clogged and the action of the skin in throwing off waste matter is greatly interfered with. This forces the kidneys to do work for which they are not intended, and in the long run the health is apt to suffer.

Cleanliness of the mouth is most important. To maintain it, you should brush your teeth night and morning, using a powder similar to the following, which any druggist can make and which is inexpensive and efficient.

Precipitated chalk.....3 parts
Powdered orris root.....1 part

If brushed only once a day, the best time is before you go to bed; then the food particles cannot ferment, producing lactic and other acids while you sleep. These acids act as a corrosive to the tooth enamel; once the enamel is gone, decay progresses rapidly and cavities are formed. Once or twice a week clean between the teeth with dental floss. The brush cannot reach these places and it is important that they be kept clean.

Rule 6. BE AS REGULAR AS POSSIBLE IN ALL YOUR HABITS.—We are all familiar with the result of eating at any and all times, and also of irregular and broken sleep. It is quite unnecessary that the regularity of habits be measured by minutes, but

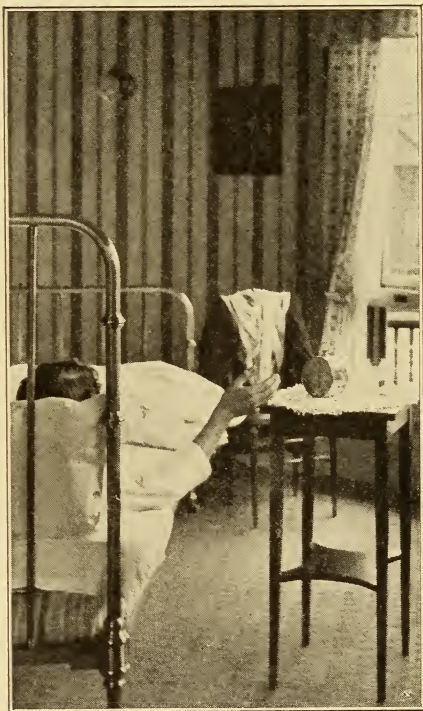
COMMUNICABLE DISEASES

our meals should, and in most cases can be within a quarter or half an hour of the same time every day.

Freedom from constipation depends on regular hours more than any other one thing. Of course, exercise and diet count for a great deal, but no more than a long-established habit of attention to the bowels at the same time every day. For most people this matter is best attended to just after breakfast and before going to work.

It is a familiar fact that if we retire at about the same time every night, in good season, we are pretty

sure to wake up at the same time in the morning. Reaching over to the alarm-clock, we often find that it is due to ring in five or ten minutes.



SIX O'CLOCK EVERY MORNING

HOW TO PREVENT SICKNESS

This is an example of a good habit established by regularity.

Remember, then, that habits of regularity are especially important as related to our sleep, our meals, and attention to the bowels.

Rule 7. BE TEMPERATE IN ALL THINGS.—Some people think of the word “temperance” as applying simply to alcoholics, but we may very easily be intemperate as regards our food, in our exercise, and in many other things. Essential as eating and exercise are, they may easily be overdone.

Overeating is especially common among Americans and is responsible for numerous ills later on in life, such as Bright’s disease and gout. A pretty good sign of having had enough to eat is the food ceasing to taste good. “Stuffing” beyond this point, or “finishing up” a meal simply because you have paid for it or because it has been served, is a tax on the digestion, causing it extra and unnecessary work. Of the two, overeating is perhaps more harmful than eating too little. The effects of the former are difficult to remove, whereas those of the latter are easily remedied.

Do not *overdo* the matter of exercise. Moderation here, as in everything else, should be borne in mind. For one who is comparatively quiet all week it is unwise to attempt to walk fifteen or twenty miles on Sunday, the first time, or to go to any other extreme. Simple fatigue is not harmful, but remember to stop there; to push on to the point of

COMMUNICABLE DISEASES

exhaustion is decidedly bad and counteracts all the good that may have been accomplished.

A lengthy discussion relative to the temperance question would be unprofitable here. As a general



FOUR STIMULANTS THAT SHOULD BE USED IN MODERATION
IF AT ALL

rule, however, it may be said that for a healthy person whisky and other strong drinks are a bad thing. There is no doubt that less alcohol is being consumed every year; people are gradually getting away from liquor. This is so because through popular education people are beginning to realize the harmful effects of strong drink; employers take it for granted that their workers are temperate, and, finally, the number of states in which liquor is being legislated against is constantly increasing. There is no real strength in alcohol, despite the

HOW TO PREVENT SICKNESS

belief of some to the contrary. Liquor may brace up a person temporarily, but it is like whipping a tired horse, and there is bound to be a reaction. Beer is one-tenth as strong as whisky, so that an occasional glass, say one or two a week, might not be harmful. This is by no means an indorsement of the habit of beer-drinking, nor is there any real reason for its use.

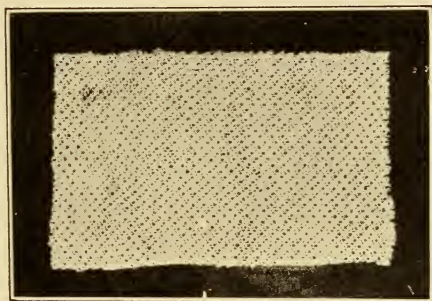
As for tea and coffee, their use in moderation by healthy, active persons is not harmful. By moderation is meant one cup of each a day. It is unwise to allow children to drink these beverages, as they are passing through a formative stage and are more likely to be affected by these nerve stimulants than are adults. For those who would find it difficult to give up coffee, it may be said that there are certain preparations of coffee on the market from which practically all of the caffeine, the poison of coffee, has been removed. The removal of this caffeine does not interfere with the flavor of the coffee, but prevents the usual harmful effects of excessive coffee-drinking. What has been said of coffee and tea is true of tobacco; used moderately, adults suffer little, if any, harm from its use. It is the *abuse* of beer, coffee, tea, and tobacco that is harmful, and if we use these stimulants at all we should watch ourselves closely that we do not overstep the bounds of moderation.

Rule 8. WEAR THE PROPER CLOTHING.—For the preservation of health it is necessary that a

COMMUNICABLE DISEASES

body temperature of 98.6° be maintained. This is accomplished partly by the action of the skin through the sweat-glands, and also by the small blood-vessels which regulate the amount of blood which is brought to the surface. The two principal things which aid the skin in the performance of its function are bathing and proper clothing. The subject of bathing has been discussed.

Being next to the skin, underclothing deserves special attention. In the selection of undercloth-



POROUS OR MESH UNDERWEAR

ing two things should be borne in mind: 1. Its conductive properties. 2. Its absorbent properties. Judged by these standards, porous or mesh underwear is the best, as it is both an excellent non-conductor and very absorbent. Because of the hundreds of open spaces in mesh underwear, there is produced what is practically a layer of air between the skin and the outer garments, and air is an excellent non-conductor. In winter the non-

HOW TO PREVENT SICKNESS

conducting property of porous underwear plays the important part in keeping the body heat in and the cold air out. Also, its power of absorption tends to keep the skin surface dry by favoring rapid evaporation. As a wet, clammy skin is a powerful cause in "catching cold," porous or mesh underwear is for this reason a great aid in the prevention of colds and other winter ills. For this same reason of absorption, mesh underwear is very comfortable in summer in assisting in the evaporation of the excess moisture which is apt to be present. As a matter of fact, unless one is exercising or it happens to be unusually warm, porous underwear will keep the skin dry and comfortable in summer.

A great deal of stress has been laid in the past on the character of the fiber used in underclothing. That is, whether it be wool, cotton, silk, or linen. We are beginning to learn, however, that the value of underclothing depends not so much upon the kind of fiber used in its making as on the way the goods are woven. This applies to porous underwear, which is to be had in both linen and cotton. Linen mesh is quite expensive, but equal benefits may be enjoyed by those wearing cotton mesh instead, which may be obtained at small cost. It is the porous feature that is important, the fact that it is linen or cotton or silk being a minor matter. If mesh underwear is not used, then woolen undergarments come next in value in winter. This is because they absorb moisture very well, and be-

COMMUNICABLE DISEASES

cause, as usually woven, they have considerable air space between the fibers. Cotton and linen fabrics are good conductors and consequently are better in summer than wool.

To sum up, while woolen garments are good in winter and cotton is good in summer, medium-weight mesh underwear is better than either, both in winter and in summer.

Many make the mistake of wearing heavy suits of outer clothing in winter in addition to heavier underwear. They have in mind the very few hours they are in the open, when as a matter of fact they are indoors twenty or twenty-two hours of the twenty-four, the temperature there often being as high as 80° and 85° . This is worse than summer heat, for with the windows closed the fresh air available in summer is lacking. For this reason perspiration is apt to be free, and then the exposure on going outside, to a temperature often 50° or 60° lower, creates the ideal condition for taking cold. The more sensible plan is to wear the same weight of outer clothes in winter that we do in summer, relying upon the overcoat alone for protection when outside. For the success of this plan you should, of course, wear either mesh or woolen underwear, and not cotton. Those who have adopted this form of winter dress know the comfort and decreased frequency of colds that result, and it would be difficult to persuade them to return to the old practice. It is almost necessary to have both a

HOW TO PREVENT SICKNESS

heavy coat or ulster for the severe weather and a light coat for spring and fall use. The ulster might be uncomfortable at the latter seasons, whereas there are many days when it is unwise to go without an overcoat of some sort.

The wearing of "chest-protectors" is to be condemned. Quite the opposite of protecting, they weaken the chest and render the user a much more



A VALUABLE AID IN THE PREVENTION OF COLDS

easy prey to colds and other troubles. The reason for this is that they make the chest more sensitive to the cold. The best "chest-protector" is cool sponging of the chest every morning, followed by vigorous rubbing. For the same reason, it is unwise to wear sweaters indoors.

All the clothing worn during the day should be removed at night, and clean, fresh nightclothes put on.

It is very important that the feet be kept dry at all times. Nothing accomplishes this as well as rubber overshoes. Unfortunately, these are re-

COMMUNICABLE DISEASES

garded by some as a nuisance, but they are one of our most valuable aids in combating winter ills.

To sum up:

1. Eat the proper amount of nourishing food.
2. Breathe all the fresh air possible.
3. Take regular daily exercise.
4. Get sufficient sleep.
5. Keep clean.
6. Be regular in your habits.
7. Be temperate.
8. Wear the proper clothing.

Memorize these eight fundamental rules and try to keep them constantly in mind. Nature is very generous, and with a little reasonable and intelligent co-operation she will always go more than half-way to keep us in good health.

Some of you will read these eight rules and then say: "Pretty good idea. Guess I'll have to try it out." Then the book will be put aside and that will be the end of it. Don't you be one of these. As a practical suggestion, and to aid you in making the eight rules a reality, the following outline is presented. This schedule is to be used simply as a guide, for every one will have to lay out a plan to suit his or her own particular home and working conditions:

6 A.M. Arise.
6.00- 6.05 Exercise.

HOW TO PREVENT SICKNESS

- 6.05- 6.20 Bath and toilet.
- 6.20- 6.30 Dress.
- 6.30- 6.45 Eat breakfast.
- 6.45- 6.50 Attention to bowels. Brush teeth.
- 6.50- 7.30 Walk to work.
- 12.00-12.30 Wash hands and eat dinner.
- 12.30-12.45 Exercise in open air.
- 12.45- 1.00 Rest.
- 5.30- 6.10 Walk home.
- 6.10- 6.30 Wash hands and eat supper.
- 6.30-10.00 Rest and recreation.
- 10.00 Brush teeth. Drink glass of water.
- 10.00- 6.00 Sleep with windows open.

Follow such a schedule as closely as you can for one week and then at the end of the week check up and see where you fell short. Repeat this next week and see if you cannot make a perfect score. The object of all this is to get yourself in the habit of following out the schedule without thinking—so that it becomes “second nature.” When you arrive at this point, you have really accomplished something for your health, for you can forget the schedule and things will take care of themselves, with practically no thought and very little effort on your part.

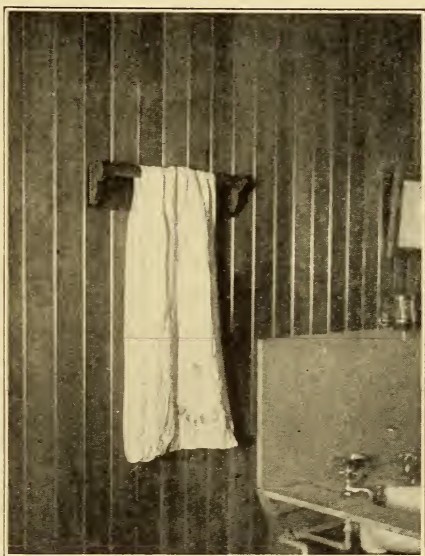
Remember that you will accomplish more toward the prevention of disease by keeping yourself in good physical trim than by anything else you can

COMMUNICABLE DISEASES

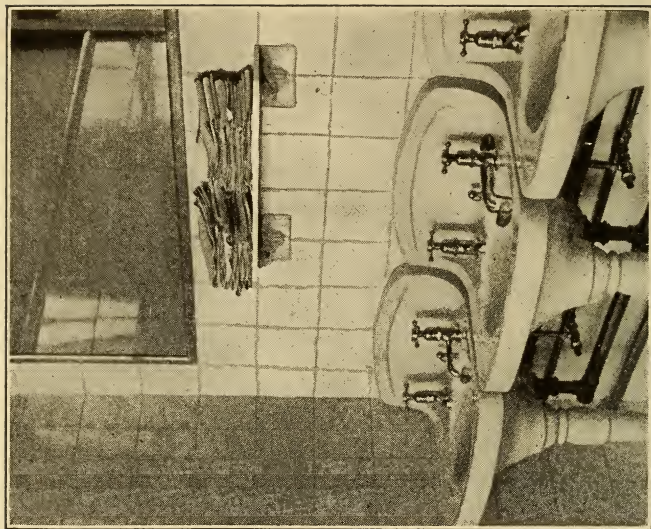
possibly do. It will help to protect you, not only against certain diseases, but against disease in general.

II. USE YOUR OWN TOWEL ONLY.

It is not simply a fad or a notion that certain diseases may be spread by the use of the same towel by several persons in common. It is such a frequent means of spreading disease that many states have passed laws forbidding the use of the common towel in factories, offices, and trains. Aside from sanitary reasons, it is not a pleasant idea to dry the face and hands on the same towel used by some one else, especially if that person is a stranger. Nothing could induce you to use another person's toothbrush or eat from a soiled plate in a restaurant until



THE COMMON TOWEL MUST GO; IT IS A
DISEASE-SPREADER AND IN MOST CASES
IS AGAINST THE LAW



BOTH OF THESE METHODS ARE SANITARY

The paper towel is used once and then thrown away; the individual towel is used by one person and then laundered.

COMMUNICABLE DISEASES

it had been thoroughly washed. Why is it not just as important to use your own towel? It is.

It is a simple story, the part played by the common towel in spreading disease. For example, a man suffering with some skin disease or any one of a dozen other different diseases washes his face and hands and then dries them on the towel, depositing thousands of germs upon it. It is not long before the next person comes along and in perfect ignorance of who used the towel a few minutes before, dries his face and hands on it. Why shouldn't he? germs are invisible and the towel LOOKS CLEAN. But they are there just the same, waiting for victims. After a few days the unfortunate person wonders why his face is "broken out." How plain it all seems to us, though, who know how it really happened.

Individual towels are replacing common towels so rapidly that the old-fashioned roller towel is now almost a curiosity. In its place we see either the neat pile of individual towels—a fresh one for each person—or a roll of paper towels; either method is entirely sanitary. Paper towels are not always popular when first used, but when it is seen that by a little care and intelligent use they really do the work, they prove quite satisfactory.

III. USE YOUR OWN DRINKING GLASS OR CUP.

What has been said about the common towel applies equally to the common drinking-cup. Most

HOW TO PREVENT SICKNESS

of us remember distinctly the tin cup on a chain which might have been seen a few years ago at any public drinking-fountain in our parks. The common drinking-cup was also a familiar sight on rail-



"COME ON, BILL; GIVE ME AND THE KID A CHANCE"

road trains. They are a thing of the past now, for the simple reason that they are against the law. The law was not passed for the fun of it, but because there were excellent reasons why it should be passed. It is a fact that diphtheria, typhoid fever, and certain blood diseases are readily spread by the use of the common drinking-cup, and it is because the public is being rapidly educated to this fact that this unsanitary practice is now so seldom seen.

COMMUNICABLE DISEASES

There are a few common drinking-cups left, however, here and there, and this will warn you against their use. If you are very thirsty and do not happen to have a glass or cup, you can easily make one out of paper, which will answer the purpose. Even newspaper will do, but paper of better quality is preferable. Fold a piece of square paper as shown in the diagram and you will have a sanitary drinking-cup which will do very well in an emergency.



There are two sanitary substitutes for the common drinking-cup, either of which is good.

1. *Sanitary bubbling fountains.*—These are almost ideal because the water is pure, cooled to the right temperature, and the fountains are usually white and attractive, which encourages the frequent drinking of water. A simple arrangement sometimes seen is made by inverting an ordinary tap so that it points straight up instead of down; it is thus converted into a sanitary drinking-fountain. The suggestion to “bite the bubble” is a good one, as care should always be taken to keep the lips away

HOW TO PREVENT SICKNESS

from the metal or porcelain parts of a bubbling fountain. The point is not to see if you can drink the water as fast as it flows, but to drink it from the TOP OF THE JET.

2. *Individual drinking-glasses.*—To have a glass or cup in your locker or desk for your own exclusive



SANITARY DRINKING-FOUNTAIN; AN IDEAL WAY TO DRINK WATER

use is a sanitary practice. The objections are, however, that the glass gets soiled quickly and it is often so much bother to search for it and take it to the supply of water that the matter is apt to be neglected, with the consequence that you do not drink enough.

COMMUNICABLE DISEASES

IV. DRINK PURE WATER ONLY.

Fortunately for most of us who live in cities, the supply of drinking-water is pure and wholesome. Tests of the water are constantly being made by experts in the health department, and notice is

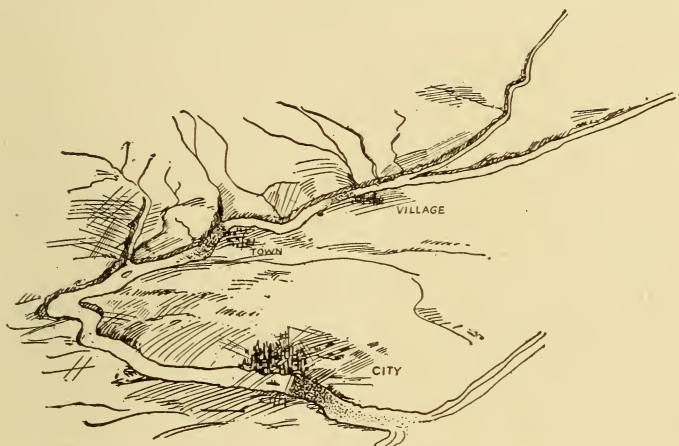


DIAGRAM SHOWING HOW CITIES AND TOWNS CAUSE POLLUTION
OF A STREAM

The dots represent sewage which has been thrown into the river; where the dots are thickest the pollution is the greatest.

immediately given if any impurities are observed. Only in rare instances does this occur, and for a short time only, so that for all practical purposes we may consider it safe to drink tap water in our large cities and towns, provided we make sure that this water comes directly from the city mains.

At times, however, and especially in the summer,

HOW TO PREVENT SICKNESS

many of us are away from home. At the lake, on picnics, or on excursions we are usually near some water, but are not sure of its purity. A laboratory test would be the only certain way to find out if the water is pure, but that, of course, is out of the question. If you bear in mind these practical points you will be fairly safe:

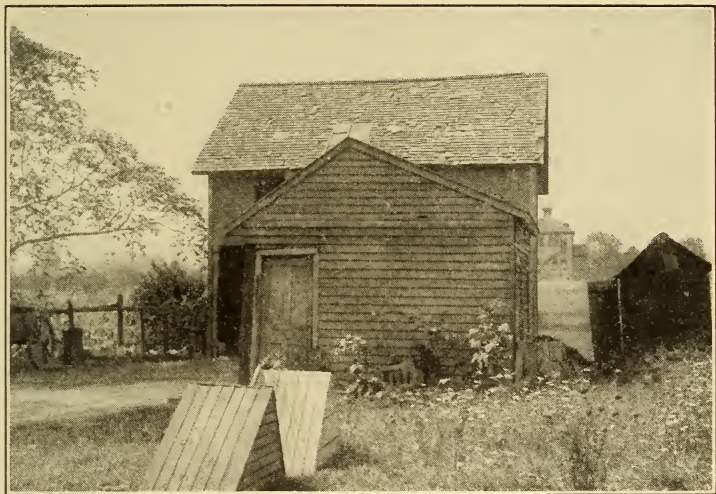
Never drink water from the following sources unless it has been boiled:

- (a) Along the shores of the lake.
- (b) River water, especially in the neighborhood of cities and towns.
- (c) Small creeks or brooks running through or near settlements.
- (d) Cistern water. This is usually rain water, which was originally pure, but collects germs as it passes through the air, and then, after washing off the roofs of houses and barns, is conducted into a hole in the ground. Such water is never fit for drinking purposes.
- (e) Canal water.
- (f) Well water under certain conditions. Sometimes a well is located so near a privy or other source of contamination that it is a simple matter for disease germs to pass into and pollute the well water. If you don't believe this, look at the photograph taken in a large American city in August, 1916. That the problem is not entirely a rural one will be seen when you consider that there are still over a thousand privies in use in the same city.

COMMUNICABLE DISEASES

The inspectors of state departments of health are constantly finding conditions illustrated by the diagram (page 43).

If you happen to be near any of the above sources of water-supply and there is no known pure water



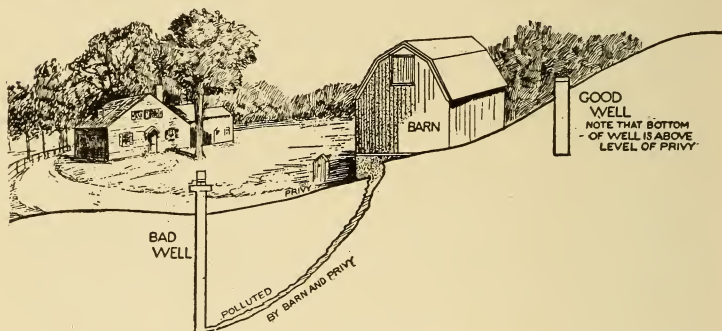
AT THE LEFT IS AN OLD WELL IN DAILY USE FOR THE FAMILY WATER-SUPPLY. DIRECTLY OVER THE WELL IS THE CHICKEN-YARD, WHILE JUST TO ONE SIDE ARE THE COW-STABLE AND PRIVY. HOW DO YOU LIKE THE IDEA?

at hand, the only safe way is to boil the water before drinking. Then and then only will you be safe. Boiling the water for ten minutes kills any germs present. This applies, of course, to coffee-making on picnics; in the process of boiling the coffee the germs are killed. Understand, we are not

HOW TO PREVENT SICKNESS

advising you to drink such water, but simply telling you the conditions under which it is safe to do so in an emergency.

As far as possible avoid drinking water on trains and in theaters, railroad stations, or other public places. Individual drinking-cups may be supplied, but the handling of ice and water is often carelessly



done. Often a cake of ice is dragged over a dirty railroad-station platform, cut up, and a piece dropped into the water-tank, in *direct* contact with the water used for drinking purposes. To drink such water from an individual cup and feel safe is to live in a fool's Paradise.

You can safely drink from

(a) Springs, provided it is near their source. Spring water is pure as it comes from the ground, and if taken at that point it has not had a chance to become contaminated.

(b) Large lakes, when the water is taken at a considerable distance from the shore.

COMMUNICABLE DISEASES

(c) Mountain streams and brooks running through wild country.

(d) Driven wells located at a considerable distance from outhouses or other sources of contamination. Whenever you drink well water remember the diagram shown above.

Don't get the idea that "this water business is all nonsense." It isn't. Dozens of people come back to the city every fall after an outing in the country, only to develop typhoid fever and other intestinal diseases which were contracted by drinking impure water while away from home. The matter of water-supply is a most important one, and that is why the authorities consider it wise to spend so much of our tax money in procuring a safe and pure supply. The point to bear in mind is that simply because city water is pure you are not justified in dismissing the matter and arguing that all water is pure. If you realize this now, you will be one step nearer the prevention of sickness.

V. PROTECT YOURSELF AGAINST FLIES, MOSQUITOES, RATS, MICE, AND OTHER VERMIN.

(A) FLIES

Most of us screen our houses during the fly season, but the reason for doing so in most cases is because we do not like to be bothered by the flies. There is a much more important reason why

HOW TO PREVENT SICKNESS

we should keep flies out of our homes and away from the food we eat; it is because FLIES CARRY THE GERMS OF DISEASE. To understand more clearly



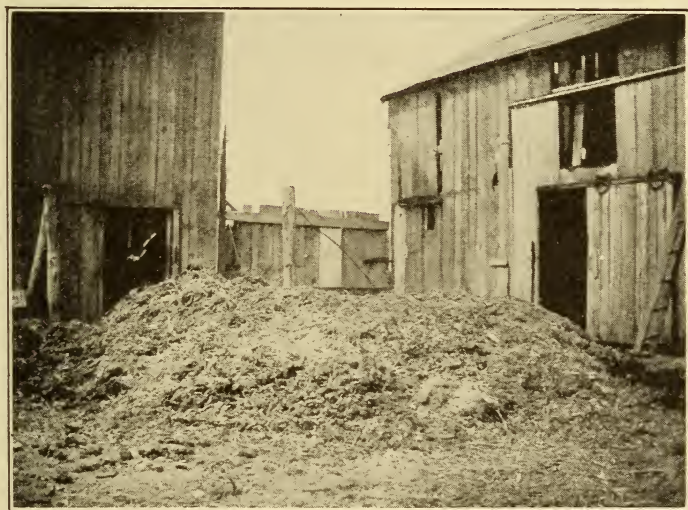
THE COMMON HOUSE FLY IS RESPONSIBLE FOR THE SPREAD
OF MORE DISEASE THAN ANY OTHER INSECT

how this takes place let us consider something of the habits and the life-history of the common house fly.

Habits.—Flies are rapid breeders. As the female fly deposits about one hundred and fifty eggs at a time, and as the development from egg to adult fly requires only ten days, it is easy to understand how one fly can be responsible for millions of other flies before the summer is over. That is the reason why it is so important to kill flies EARLY in the

COMMUNICABLE DISEASES

season. The cold weather kills most of the flies, but a few manage to survive the winter by crawling into cracks or other out-of-the-way places where it is warm. The holdovers are the ones that are re-



A MANURE PILE IN THE CENTER OF A LARGE CITY; AN IDEAL BREEDING-PLACE FOR FLIES

sponsible for the fly crop of the following season. A fly killed in April is equivalent to killing millions of flies in September. Remember this. It is the most important point in connection with the fly problem.

Fly-breeding.—Flies breed in filth, their favorite breeding-place being horse manure. In this they find warmth, moisture, and food, the three condi-

HOW TO PREVENT SICKNESS

tions necessary for their development. Decaying and fermenting garbage also furnishes the proper conditions for fly-breeding.

Fly eggs are smooth and white and look like grains of rice, though of course they are very much smaller.



AT THE TIME THIS PHOTOGRAPH WAS TAKEN THOUSANDS OF FLIES WERE FEEDING UPON THE CONTENTS OF THIS CAN

Under favorable conditions they hatch in about twelve hours and produce the white, moving, worm-like maggots or larvæ familiar to all of us. It is not a pleasant thought, but most of us have seen these maggots time and again in exposed garbage or on the dead body of a rat—they are simply young house flies. The maggots soon burrow into the substance on which they are located and become

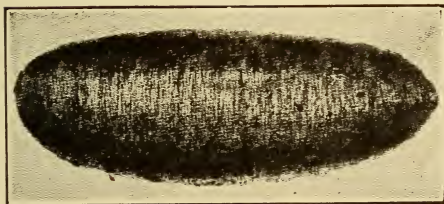
COMMUNICABLE DISEASES

transformed into the third stage of their growth, as shown in the picture. In this form they are darker in color and the wings begin to form. After ten days development is complete and the insect is ready for flight.

Flies not only breed in filth, but they continue to frequent filthy material as long as they live. They



Larvæ of the Fly



Pupa of the Fly



Eggs of the Fly

LIFE-HISTORY OF A HOUSE FLY

leave it only to enter our homes and, by means of disease germs carried on the hairy parts of their legs, spread disease. Once in the house, it is almost impossible to keep them away from food, as they are persistent feeders. Visiting our tables, they crawl over the food and contaminate it by depositing on it the germs which they have brought from manure pile, garbage-can, or privy. In eating

HOW TO PREVENT SICKNESS

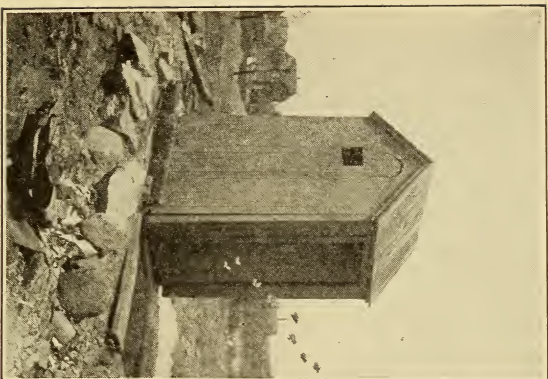
of such infected food you run the risk of contracting any one of a number of diseases, such as typhoid fever, consumption, or summer diarrhea.

It has been proven that whenever flies have access to the discharges of man through privy or toilet, and also to his food-supply, disease is bound to occur. This is the explanation of thousands of cases of typhoid fever which occurred during the Spanish-American War. Food purchased in fly-ridden markets is a source of danger, which is greatly increased if the food is eaten uncooked.

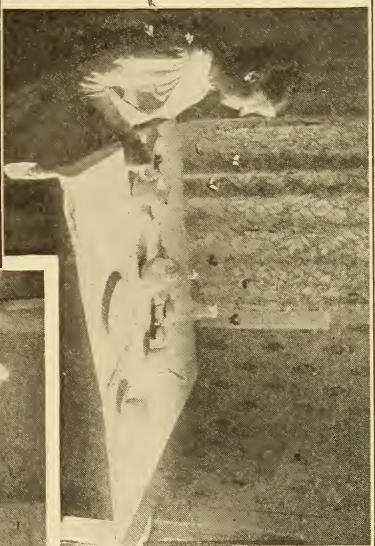
Most cases of summer diarrhea in infants are caused by contamination of the milk-supply, either before it reaches the consumer or because of carelessness in preparing the babies' bottles. As a result seventy thousand infants under two years of age die annually in the United States from this one cause. The house fly is largely responsible for this terrible waste of human life, and if we wish to save the lives of these babies the very first step in the process is to do away with flies, which are so much to blame for this and other fly-borne diseases.

Fly-destruction.—Flies have natural enemies in birds, barn-yard fowls, and spiders, but the good they do is of no practical benefit, as they fail to materially reduce the fly population. It remains for us to fight flies, and the means we have for so doing are as follows:

1. Attack their breeding-places.—As long as fly-breeding areas exist it is useless to try to solve the

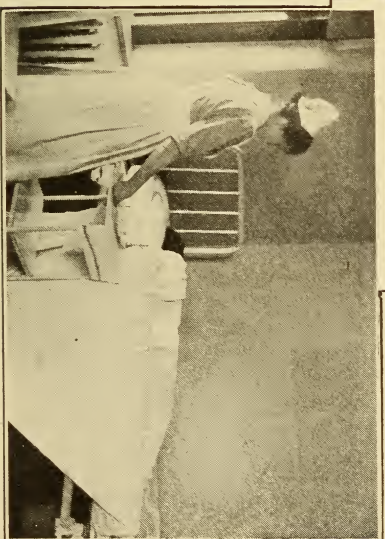


A Privy



Food on a dining-room
table covered with flies

In the hospital with
typhoid fever; the
result of carelessness



THESE THREE PICTURES NEED NO EXPLANATION
AND, THOUGH NOT PLEASANT TO LOOK AT, TELL
THEIR OWN STORY. WHAT THEY ILLUSTRATE IS
HAPPENING EVERY DAY DURING FLY SEASON

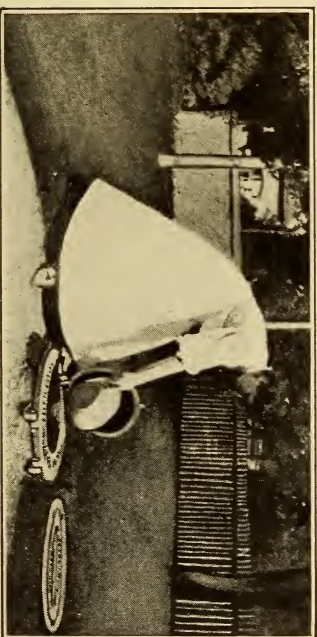
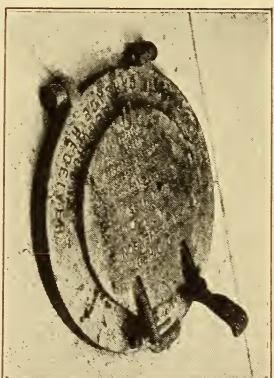
HOW TO PREVENT SICKNESS

problem. Prevent flies from breeding and it will not be long before there are no more flies.

(a) All manure should be placed in closed or screened containers so that flies are KEPT OUT. When manure cannot be covered, it should be removed every two or three days. By so doing the fly eggs will not have a chance to develop full-grown flies. This applies also to decaying vegetable matter, street sweepings, and other filth. Such refuse allowed to remain untouched for more than four days necessarily becomes a breeding-spot for flies.

(b) All garbage should be kept in metal cans having accurately fitting lids. When garbage is left exposed it becomes a breeding-place for flies and also attracts rats and vermin. Garbage-cans should be emptied at least once a week, and washed out occasionally with hot water and washing-soda in order to keep them clean and sanitary. Sunken garbage-receptacles are more expensive, but are very convenient and satisfactory. In many places collections are made twice a week in summer and weekly in winter, at the expense of the city. Where there is no garbage collection a good plan is to bury the garbage in pits dug in the ground, covering it with dirt each time the pit is used. In winter, when the ground is frozen, there is seldom more garbage in the average family than can easily be burned in the stove or furnace.

(c) Ordinary powdered borax will prevent fly eggs from hatching. Therefore, as an additional pre-



TWO SANITARY METHODS OF GARBAGE DISPOSAL

The cut shown in upper right is an enlargement of the sunken garbage receptacle shown in lower right.

HOW TO PREVENT SICKNESS

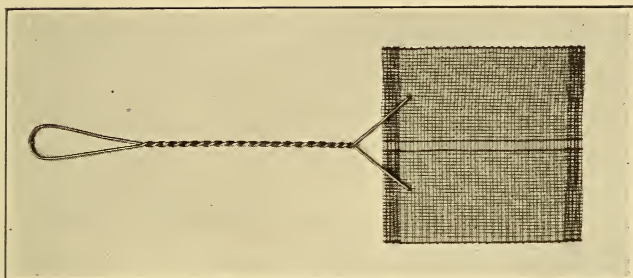
caution sprinkle a little borax in the garbage-can daily.

2. *Keep flies out of the house.*—The following means of fighting flies are given in the order of their value:

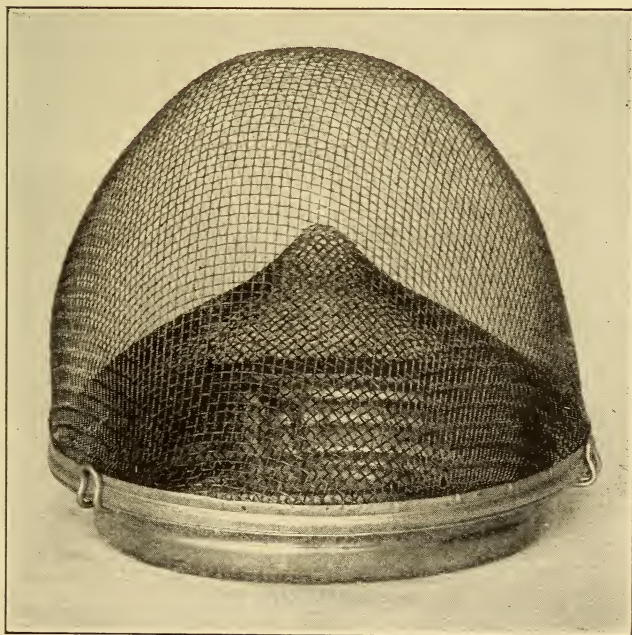
(a) Screening of doors and windows that are kept open.—This is by far the most important thing to do, because, while screens may not keep out all flies, they make it an easy matter to kill the few that enter. If it is not possible to screen the entire house, first attention should be given to kitchen, dining-room, and toilet, and all privies should be screened. It is especially important that flies be kept out of the sick-room, not only because the comfort of the patient demands it, but the chance of disease transmission is especially great under these circumstances. Bear in mind that flies become dangerous when they contaminate our food, so it is essential that they be kept away from those places where food is prepared or eaten.

(b) Fly-swatting.—Once flies are in the house they can be removed by the use of a wire fly-swatter in quicker time than by any other means. Such a swatter costs but a few cents, and if used energetically will soon rid a house of flies. It takes a person's time to do this, however.

(c) Sticky fly-papers.—These are effectual, and their principal advantage is that they are "on the job" night and day and require no attention, once they are placed. Their drawback is that they



FLY-SWATTER



ONE OF THE BEST KINDS OF FLY-TRAPS

HOW TO PREVENT SICKNESS

often catch things besides flies and their presence about a house does not improve its appearance.

(d) Fly-traps.—These have been recommended by some health departments, and while they require only slight attention and do catch flies, still they are not nearly so effective as sticky fly-paper. Substances poisonous to flies placed in saucers about the house are not recommended, because of the danger to children and household pets.

To sum up, if the energy displayed in fly-killing campaigns in August and September could only be properly spent in the early spring months, and if we would realize that strict cleanliness and the immediate disposal of all filth and garbage are essential throughout the year, the fly problem would be largely solved.

(B) MOSQUITOES

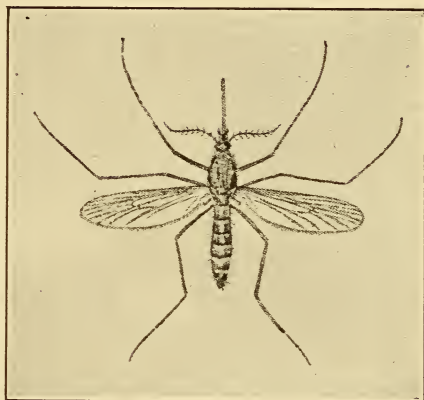
To those of us who live in the North and West, mosquitoes are not nearly so dangerous as flies; there are two reasons for this. In the first place, although a certain mosquito is entirely responsible for the spread of malaria and another for yellow fever, practically none of these varieties are ever seen in these localities. The ordinary house mosquito with which we are all familiar is simply a nuisance and seldom a disease-carrier. Besides, mosquitoes do not breed in filth, as flies do, and on this account are less dangerous.

In certain localities, such as our Southern states

COMMUNICABLE DISEASES

and Panama, the malarial mosquito is common. Malaria is spread when this mosquito bites a person sick with the disease, sucks his blood, which contains the germ of malaria, then later bites a well person and so plants the germ in the blood of the victim.

Yellow fever is spread in exactly the same manner, only by another kind of mosquito. Until yellow fever and malaria had been conquered on the isthmus, it was impossible to build the Canal. The



THE CAUSE OF THE SPREAD OF MALARIA

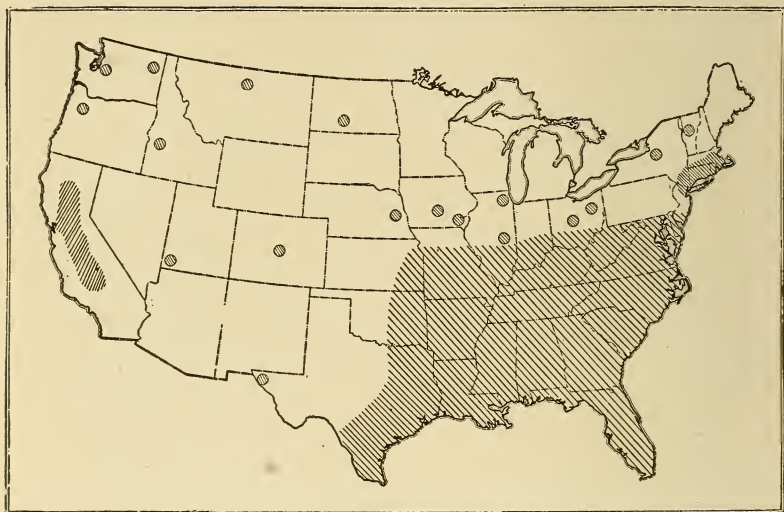
presence of these two diseases forced the French to abandon their attempt, and it was not until the doctors of the United States army succeeded in exterminating the mosquitoes that spread yellow fever and malaria that effective work in the Canal Zone was possible. Credit for the Panama Canal really belongs more to the army doctors than to the engineers.

Mosquito-destruction.—Since all mosquitoes are a nuisance and some carry disease, the only safe rule is to do away with them as far as possible.

HOW TO PREVENT SICKNESS

The destruction of all forms of mosquitoes is accomplished by practically the same methods.

1. Attack their breeding-places.—As mosquitoes require shallow, stagnant water for breeding, their



THE SHADED PORTIONS OF THIS MAP OF THE UNITED STATES
SHOW WHERE MALARIA STILL EXISTS

favorite locations are swamps and marshy land. Rain water collected in barrels, cisterns, or found in empty tin cans, broken bottles, pails, or stumps of trees also furnishes ideal conditions for the breeding of mosquitoes. All that it is necessary for us to do, therefore, is to do away with such stagnant water, and mosquitoes will not be able to breed. Swamps and marshy lands should be

COMMUNICABLE DISEASES

drained, and we should be particular that no uncovered receptacles which might hold water and thus become breeding-places are permitted about our premises. Where it is not possible to drain off



AN IDEAL BREEDING-PLACE FOR BOTH MOSQUITOES AND FLIES

Note the stagnant water in the old dish-pan on the right.

stagnant water, kerosene-oil poured on the surface will form a film which smothers the young mosquitoes or "wigglers" that come to the surface for air. This is an effective method of mosquito eradication.

2. Screening.—In planning our fly-screens the mesh should be fine enough to keep out mosquitoes as well as flies. No. 16 mesh wire will accomplish this.

The above are our most effective means of fight-

HOW TO PREVENT SICKNESS

ing mosquitoes. Their habits are so different from those of flies that it is not practical to attempt to "swat" or trap them. Mosquitoes do not fly far from their breeding-places, so if you are troubled with them you may be sure that the cause of the nuisance is near by. Search for it and destroy it.



Courtesy of W. Lyman Underwood, Cambridge, Mass.

MOSQUITO-BREEDING

Actual photograph showing the young mosquitoes (wigglers) coming to the surface of the water for air.

It is a curious fact that while the United States government has secured such brilliant results in the way of mosquito extermination in Panama and Cuba, with the conquest of yellow fever and malaria, practically nothing has been done to protect its own people against the danger of this insect.

COMMUNICABLE DISEASES

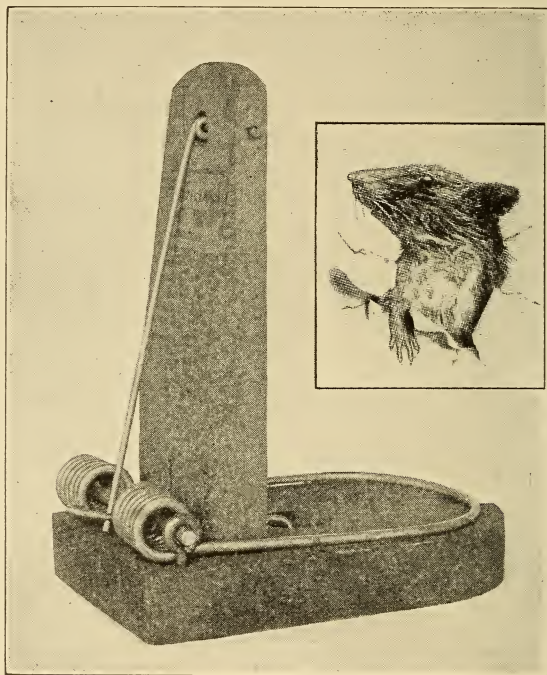
So it is up to us as individuals to do our part if the mosquito is to be done away with.

(C) RATS AND MICE

The principal objection to these little animals is that they eat or ruin thousands of dollars' worth of goods every year and are destructive in other ways, often starting fires by gnawing away the insulation of electric wires or by biting the heads off matches. However, they are also dangerous to health in Asia, Mexico, and the Hawaiian Islands, for the reason that a disease called plague is carried only by a certain kind of flea that lives on the rat. Fortunately, this disease is rare in the United States. Rats live in dirty places such as sewers and drains, and eat garbage and other refuse, so it is probable that when they also have access to our food-supply there is danger of its becoming contaminated. Also, the disease caused by trichina (small worms) from "measly" pork can often be traced to the rat. The rat, cat, and hog are the only animals known to be infested by trichina, the disease in hogs being caused by their eating trichinous rats. If we should then eat such pork before it has been thoroughly boiled we are in danger of getting the same disease. For the reason that about one hog in every fifty is infested with trichina it is evident that persistent warfare should be made against rats in slaughter-houses, butcher shops, markets and places where hogs are kept.

HOW TO PREVENT SICKNESS

Rats and mice are prolific breeders, the female having her first litter when less than six months old, and then producing forty or fifty young in a year's



A SPREADER OF DISEASE AND THE BEST KIND OF RAT-TRAP

time. Fortunately for us, rats are cannibals, otherwise they would be present in alarming numbers.

Quite aside from their effect on our health, rats and mice are disgusting things to have about the premises, so it is well to know the best means to be rid of them.

COMMUNICABLE DISEASES

1. *Starve them.*—If all food is carefully put away in cupboards or ice-box, and all scraps and garbage kept in metal receptacles with tight-fitting covers, rats and mice will soon vacate. *They must eat*, and if you do not feed them they will quit your place and go and live with some one else who does.

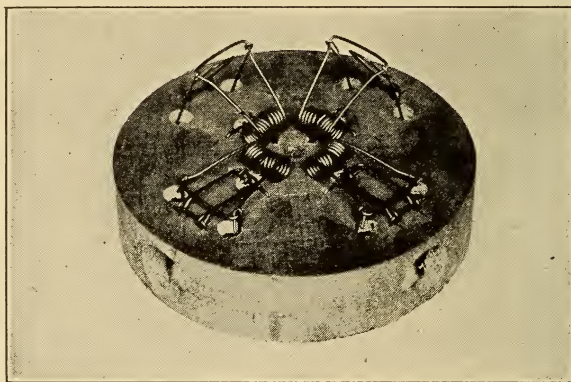
2. Of course, in grocery-stores, markets, granaries, and other places where food is to be had for the gnawing it is difficult to get rid of rats and mice unless the building is made RAT-PROOF. This is done by filling their holes with cement or with broken glass covered with cement, or by fastening tin or other metal over their holes. Rats and mice usually select the angles and corners, so these are the most important places to protect. It is a good plan to do this even in your own home if troubled with rats and mice, as it will render their extermination more easy.

3. *Traps.*—It cannot be emphasized too strongly that unless suggestion 1 is faithfully carried out and no food left exposed, few rats and mice will enter the traps you set. Most of them will not go near a trap unless forced to do so in their search for food.

(a) *Kinds of traps.*—There are many different devices with which to catch rats and mice—wire, steel, barrel, spring, and other kinds of traps, but only the two most practical for household use will be described. The best rat-trap is shown in the photograph, and any rat or mouse that snaps this trap is almost sure to be caught. Such traps are

HOW TO PREVENT SICKNESS

inexpensive and are supplied in mouse sizes constructed of metal or wood for five cents. In the larger sizes, for rats, they cost twenty cents. The old-fashioned wire trap is more expensive, costing



A CHEAP MOUSE-TRAP THAT "GETS THEM"

about fifty cents, but it has the advantage of always being set and capable of catching as many as a dozen rats or mice at once.

(b) Bait.—Cheese is without question the best bait for mice. For rats, there is some difference of opinion, some preferring to use fried bacon, while others like toasted cheese or fish-heads. The writer, however, has had most success with raisins and corn meal. A single raisin is pressed firmly into the small hole in the tread or trigger of the trap and corn meal sprinkled lightly over the raisin, on the trap itself, and on the floor for a short

COMMUNICABLE DISEASES

distance away from the trap. This bait has tempted a rat the first night used after other baits had been refused for weeks.

(c) Hints on setting traps.—As rats and mice have a highly developed sense of smell, always wear gloves when baiting and setting traps. After catching a rat or mouse it is a good plan to set fire to a crumpled-up newspaper and pass the entire trap through the flames several times. This destroys any human scent that may be on the trap, and also the odor of rat blood that often remains on the trap after successful use. By fastening the bait on the tread with a piece of thread it is harder for the rat to get it off, and in its efforts to loosen it is more apt to be caught. When using the wire trap set it against a wall, and then throw an old sack over it; rats and mice will enter a trap so arranged after they have avoided it for weeks when placed in the middle of the room and exposed. A single rat is sometimes left in the wire trap as a decoy. It is a good plan to bait traps for a few nights before setting them, in order to get the rats or mice in the habit of visiting them. This is especially helpful in the case of the wire trap and is done by opening the door in the back. Don't expect to rid a place of rats or mice by means of one or two traps; have as many as you can afford or have time to care for—the more the better.

Too much reliance should not be placed on cats

HOW TO PREVENT SICKNESS

and dogs to keep rodents away. A cat may be ever so good a mouser and a dog a good ratter, but they usually teach the rats and mice to lie low and rarely succeed in entirely ridding a place of these pests. *The only sure method is starving combined with trapping.*

(D) COCKROACHES AND OTHER VERMIN

Roaches, or water-bugs, are found principally in kitchens, pantries, and bath-rooms. The presence of roaches means bad housekeeping, for they must have food in order to live. If the premises are kept clean and no food is left exposed, cockroaches will soon leave for better hunting-grounds. This pest is most active at night, and is so quick in seeking a hiding-place in the cracks and woodwork that it is difficult to catch it.

If roaches should ever get into your home, dust pyrethrum powder about the places known to be frequented by the insects. This powder may be obtained in any drug-store and is of a brownish color when fresh.

Bedbugs are small, brown insects with very flat bodies whose favorite resting-places are, as the name indicates, in beds. They much prefer wooden bedsteads to iron or brass ones; metal beds are easier to clean when they become infested.

Their flat bodies enable them to hide in the narrowest chinks and cracks of beds and walls, where they remain during the day. At night they

COMMUNICABLE DISEASES

come out for the purpose of sucking blood from the occupant of the bed.

The presence of bedbugs in a house is not necessarily an indication of neglect or carelessness. They may get on the clothing while riding on street-cars or trains or may be carried into the house by means of trunks or satchels. Also, workmen or visitors may introduce them into the house.

To get rid of bedbugs.—After opening all windows, examine and shake bedding, and then hang it out of doors to air on a clothes-line. Sprinkle naphtha liberally on mattress and pillows and place them out of doors also. Brush corners of walls, particularly over door and window frames and picture-moldings. Take bedstead apart, and by means of small brushes or feathers introduce plenty of naphtha into all joints and grooves. Sprinkle naphtha on the carpet also. Then, after leaving the room and shutting the door, do not go back again until the naphtha has evaporated. Repeat the entire process in about a week in order to kill the young bugs hatched from the eggs. Naphtha is clean, not injurious to furniture or bedding, and the odor does not last long.

In comparison with flies, neither roaches nor bedbugs are important as disease-carriers. However, they are usually a sign of dirty surroundings and dirty habits, and households which permit such vermin to exist are not apt to be careful about the really dangerous disease-carriers, house flies.

HOW TO PREVENT SICKNESS

VI. BE CAREFUL WHERE YOU EXPECTORATE.

If you are in perfect health or do not chew tobacco you will not have occasion to expectorate. When you do so, it is a sign that you either have catarrh, a cold, or some other trouble. When you find it necessary to expectorate always be careful where you do so, because lack of care in this particular is not only indecent, but is an actual menace to the health of others. If you expectorate "any old place" the sputum (spit) dries, and then in sweeping or in walking about over the floors or sidewalks it is stirred up and becomes a part of the dust which is breathed into the lungs. Sputum always contains germs, and, while comparatively harmless when moist, becomes a source of danger when it is dry.

(a) *At work*.—Wherever necessary in the factory or workshop, cuspidors should be provided. They should contain an antiseptic solution which keeps the sputum moist until the cuspidors are cleaned. All cuspidors should be cleaned sufficiently often to keep them in a sanitary condition. That is your employer's part. Do *your* part by using them properly. Expectorate *into* and not at them, so that the floor about the cuspidor does not become unsanitary. A sign posted in one factory told the story in a rather unpleasant but forceful way. It read as follows: "If you spit on the floor at home, do so here. We want you to feel at home."

COMMUNICABLE DISEASES

(b) *At home.*—When you have occasion to expectorate at home, do so in the water-closet, whenever possible. Otherwise, use your handkerchief. When you have a cold, it is a good plan to carry a dozen or more square pieces of old muslin or gauze in your pocket (some people prefer soft, Japanese paper napkins). Use a fresh piece each time you are obliged to expectorate, and at the end of the day burn the soiled pieces. This is a sanitary practice and also saves the trouble or expense of laundering a lot of handkerchiefs.

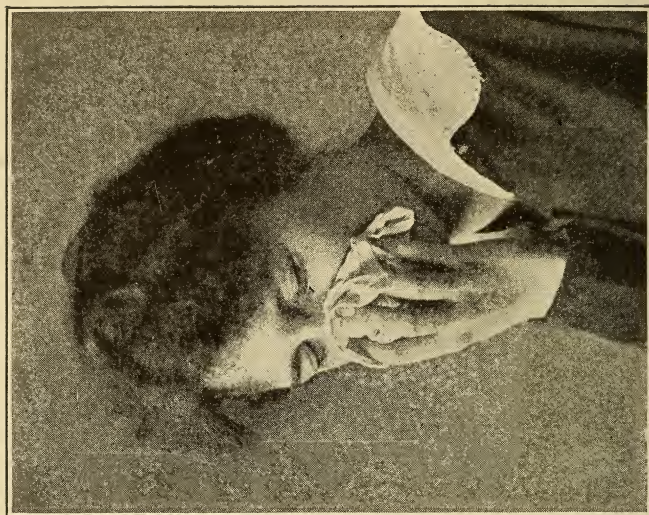
(c) *On the street.*—The law recognizes the danger of promiscuous spitting by forbidding you to do so in the street-cars. This is proper, and the law should be extended so as to cover streets and sidewalks; in fact, some cities already forbid spitting on the sidewalk. Where care is not taken in this respect, the sun and wind soon dry the sputum and the germs it contains are blown about by means of the dust. Colds, sore throats, pink eye, and other troubles, so common in the late fall and early spring, when the streets are not sprinkled or cleaned, are believed by some investigators to be due to the above conditions.

VII. BE CAREFUL WHEN YOU COUGH OR SNEEZE.

When talking to a person, ordinary politeness demands that you turn your head to one side when you cough or sneeze. In addition, you should hold



THE WRONG WAY TO COUGH



THE RIGHT WAY

COMMUNICABLE DISEASES

your hand or a handkerchief in front of your face. One of the surest ways of passing on your cold, tonsillitis, or other such trouble to another person is to cough in that person's face.

VIII. KEEP YOUR FINGERS OUT OF YOUR MOUTH AND NOSE AND AWAY FROM YOUR EYES.

It is important to remember that at all times (unless just washed) your fingers are covered with germs. Just stop a minute and think what you touch with your fingers in the course of a day—the dirty hand-rail or strap-hangers on the street-cars handled by thousands and thousands of people and never washed, door-knobs, soiled paper money, library books, and dogs or other pets whose habits are to roll in dirt and filth. The common habit of hand-shaking often forces us all to shake the hand of some person whom we would rather avoid, but whose feelings we do not care to hurt. All these and many other instances serve to illustrate how dirty our fingers usually are. The way out of it all is not to stop petting dogs, or shaking hands, or handling dirty paper money, but to be careful what we do with our fingers until they have been thoroughly scrubbed and most of the germs washed off of them. Unless your hands are perfectly clean it is risky to rub your eyes, pick your nose, or put your fingers into your mouth. Always use your handkerchief when it is necessary to blow or



THE WRONG WAY TO SNEEZE



THE RIGHT WAY

COMMUNICABLE DISEASES

clean your nose, and use only a fresh, clean tooth-pick to pick your teeth. There is an old saying that if you must rub your eyes, do so with your elbows! This advice, if followed, will certainly protect your eyes from becoming inflamed because of germs brought to them on your fingers.

One of the principal reasons why so few children escape measles, whooping-cough, chicken-pox, scarlet fever, and the other childhood diseases is that they are constantly putting their fingers into their mouths. Children should be forbidden to do this, and also kept from putting into their mouths any toys, pencils, or candy which has been mouthed or handled by others.

To see some one moistening his fingers in his mouth when sorting papers or counting bank-notes, all you have to do is to glance in almost any office—and then when these people are taken sick they complain of their hard luck. Their sickness isn't a matter of luck at all, but is due to a disregard of the rule, "Keep your fingers out of your mouth." It certainly is easier and quicker to sort papers when your fingers are moist, but moisten them on a wet sponge and not in your mouth.

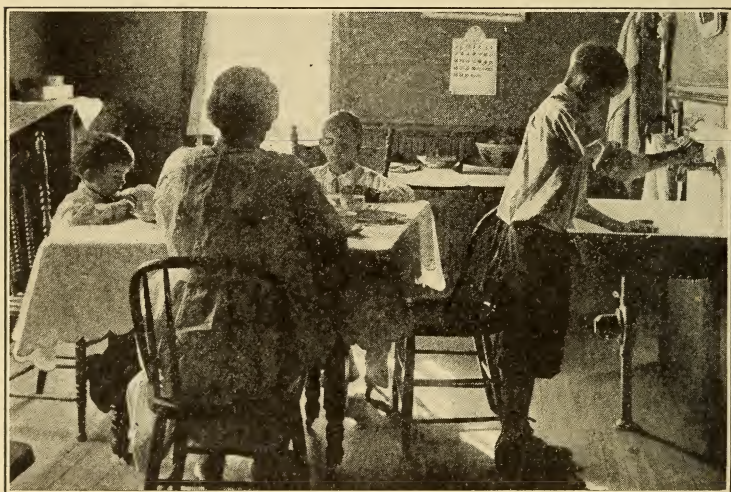
When at a card-party, what a common sight it is to see some one, when dealing the cards, moisten his thumb in his mouth, so as to deal the cards a little faster. In so doing he plants germs from his mouth on the cards. Now when it comes your turn to deal, if you do the same thing you will be taking

HOW TO PREVENT SICKNESS

his germs into *your* mouth. This is not a joke; it is a fact; and if several people moisten their thumbs when dealing cards *they are actually exchanging germs with one another*. If one of the number happens to be sick, it is one of the best means by which his sickness may be spread.

IX. WASH YOUR HANDS JUST BEFORE EATING.

One of the principal ways that germs get into the body is through the mouth, and you have seen how



THIS BOY IS WILLING TO TAKE A LITTLE TROUBLE TO KEEP CLEAN

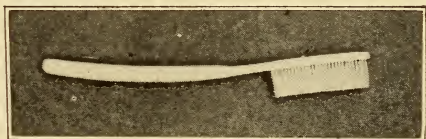
important it is to keep germ-covered fingers out of the mouth. Now our food may be ever so clean and carefully prepared, and yet, if the hands are

COMMUNICABLE DISEASES

not clean, germs may be transferred from fingers to food and so into the mouth and system. Most of these are probably harmless, but you run the risk of getting disease germs in this way. To be on the safe side and not take any chances, wash your hands as soon before eating as possible. The ideal way is to go directly to the table after washing the hands. It is very seldom that you cannot do this, and once you form the habit you will have succeeded in shutting off at least one avenue of infection.

X. BRUSH YOUR TEETH TWICE A DAY.

The mouths of persons who are careless about their teeth are said to harbor more than fifty different kinds of bacteria, many of these being disease-producers. We are told that dirty teeth are an important cause of pneumonia, and, next to consumption, pneumonia kills more people than any other disease. If these things are so, it certainly pays to keep the teeth clean—from the health standpoint as well as for the sake of personal appearance. The best times to brush the teeth are the first thing in the morning as a part of your toilet, and also the very last thing at night



ONE OF THE BEST INVESTMENTS YOU
CAN MAKE FOR TWENTY-FIVE CENTS

HOW TO PREVENT SICKNESS

before retiring. This is the most important time of the entire day, for the reason that tooth decay progresses most rapidly at night. Brush your teeth thoroughly at this time and get rid of most of the germs.

XI. AVOID CLOSE CONTACT WITH SICK PERSONS.

There is no doubt that there would be very much less sickness if this rule were more carefully observed. It is impossible and quite unnecessary to keep away from sick people entirely, for the simple reason that either at home, in the street-cars, or at work we are constantly mingling with people who have some communicable disease. The point is not to get close to them—try to keep at least an arm's-length away. Doctors and nurses who are obliged to be with the sick constantly always have this precaution in mind, and it is certainly one of the reasons why they are so seldom sick themselves. You might as well be sensible about it and do the same thing yourself. You will not hurt the feelings of any intelligent friend or relative if you are careful in this respect, and your health will be sure to profit by so doing. If you know of a person having diphtheria, scarlet fever, or any other contagious disease, it is all the more important not to go close to him. Such sick person, if not in a hospital, should be in a room by himself, and all visitors forbidden to see him

COMMUNICABLE DISEASES

except the one actually engaged in attending the case.

XII. TAKE PROPER CARE OF THE THINGS USED BY SICK PEOPLE.

Unless you are positive that the disease is not communicable or "catching," keep everything used by the sick person entirely separate from those things used by the rest of the family. When you are not sure about the matter do it anyway and be on the safe side. Probably the most important things to have in mind are the dishes, utensils such as knives and forks, towels, clothes, and bedding. All of these things may be boiled without injuring them. In the case of the dishes and utensils, boiling for ten minutes each time they are used is the safest rule to follow. Do this even in the case of hard colds, grip, or tonsillitis. Use old linen or muslin for handkerchiefs; collect in a newspaper and burn.

After the illness, or as often as necessary, boil all towels, bed linen, and clothes that are washable. The other clothes may be laid over chairs and allowed to air thoroughly, with the windows open, for several days. The chemical disinfection of rooms after contagious diseases is not so popular now as it used to be. The health officers of some large cities do not believe in it and have not practised it for years. As "the proof of the pudding is in the

HOW TO PREVENT SICKNESS

eating," it may be said that the death-rate of these cities is among the lowest in the country. However, the question at the present time is an open one, and while many agree that fresh air and sunshine are sufficient for disinfection, there are others who believe that more than this is necessary.

The best method of chemical disinfection is by means of formaldehyde. The mattress is rolled up and set on its side, dresser drawers are opened and contents exposed, and closet doors opened. The windows are then tightly closed and sealed with strips of gummed paper (made for the purpose), as are also all doors but the one leading out of the room. When the room is thus made air-tight the liberation of formaldehyde is started from a liquid preparation of the gas placed in the center of the room, after which the remaining door is closed and sealed on the outside. The question of fumigation will be decided by the physician, and instructions will be given and details supervised by him. The advantage of the formaldehyde method is that it is effective in killing germs, and at the same time it is not harmful to household goods, as some other methods are.

It is important to remember that the ideal disinfectant is BOILING and that whenever possible this should be the method of choice. The use of formaldehyde is meant for those things that cannot be boiled.

In using a public telephone try not to get close

COMMUNICABLE DISEASES

to the mouthpiece. It is quite possible that the instrument may have been used only a few minutes before you by a consumptive, who, in talking, coughed and sprayed the mouthpiece with the germs of his disease. Or some one with a cold or tonsillitis or other such communicable disease may have used the 'phone just before you. If you put your face *next* to the mouthpiece, what is more reasonable than to suppose that you run the risk of acquiring disease germs? Better play safe and keep at a distance.

XIII. BE SURE OF THE PURITY AND QUALITY OF YOUR FOOD.

You may not always be able to afford the choicer cuts of meat or other luxuries in the way of food, but care should be taken that the food you do buy is clean and wholesome.

(a) *The milk-supply*.—As impure milk has been proven to be one of the causes of typhoid fever and tuberculosis, it pays to be sure that the milk you use is free from such dangers. Nowadays most milk dealers have not only the milk they sell, but the conditions under which it is produced, investigated at frequent intervals by the health department. If you are interested in learning how careful your milkman is regarding cleanliness in finding out the number of germs in your milk as compared with other milk sold in the city, ask for this informa-



THE MODERN, SANITARY WAY



THE OLD-FASHIONED, UNSANITARY WAY

COMMUNICABLE DISEASES

tion at the health department. In this way you will learn just how your milkman stands as regards the purity of his milk; after doing this perhaps you may feel like changing milkmen. Above a certain point, the health department will not permit milk to be sold, as it believes such milk to be unsafe for use. So you see the city protects you from impure milk as well as from impure water.

If you happen to be out of the city in some place where the milk-supply is not so inspected, you will be taking no chances if you pasteurize the milk.

Pasteurization.—This simply means heating the milk for twenty minutes at a point a little *short* of boiling.

(b) *Meat.*—Infection by trichina may result from eating infected pork that is not thoroughly cooked. It is a serious disease and the way in which it is spread was discussed in connection with the subject of "Rats" on page 63. Tapeworms come from eating infected pork or beef that is not thoroughly cooked. Most of the meat we eat is inspected by United States government officers, consequently the danger from this source is lessened, although not entirely done away with. However, as some meat comes directly from country slaughter-houses, we should make sure that all beef and pork (especially pork) is well done before being eaten.

The meat of cows having tuberculosis, foot-and-mouth disease, and lumpy jaw is also condemned by the Federal inspectors.

HOW TO PREVENT SICKNESS

Do not patronize dirty markets or stores. If the place is dirty, the food is more than apt to be dirty also. If your tradesman does not cover exposed fruit, vegetables, and other food in order to protect it from flies, tell him that unless he does so you will trade elsewhere. When he finds that a clean store and properly protected food mean holding his customers, he will be careful in this particular.

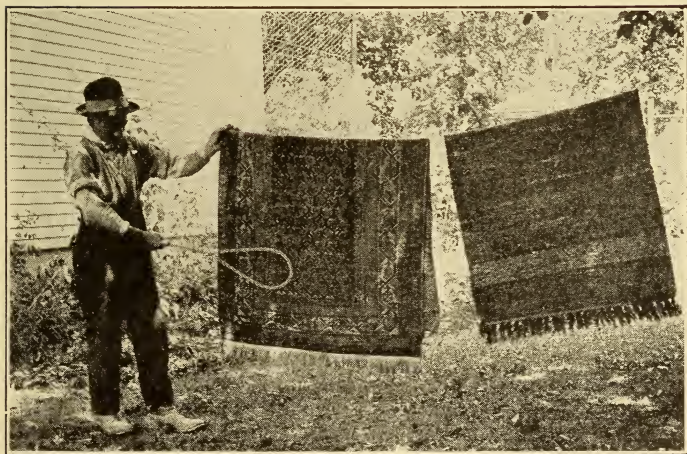
(c) *Uncooked food*.—Such articles of food as celery, tomatoes, lettuce, apples, pears, and other fruits that are eaten uncooked and often without being peeled, should be purchased in clean stores only and thoroughly washed before being eaten. In the case of bananas, oranges, and melons this precaution is not so important, because the skin or rind serves to protect the fruit from dirt. Oysters which are obtained from waters polluted by sewage are often responsible for cases of typhoid fever.

Do not permit any sick person to aid in the preparation of your food.—The reason for this must be clear to all after reading the above. Realizing the importance of the preparation of food only by persons in good physical health, some cities and employers provide for the examination of all those who work in restaurants, dining-rooms, and kitchens. In this way, no one having any communicable disease is permitted to come into contact with the food.

"Delicatessen" food.—It is expensive and unwise to make a practice of buying prepared food in



THE OLD-FASHIONED, UNSANITARY WAY



A MODERN, SANITARY METHOD

HOW TO PREVENT SICKNESS

“delicatessen” food shops. Such food is usually exposed, and is sometimes kept for so long a time on the counter before being sold that it spoils sufficiently to cause ptomaine poisoning, although it may taste all right when eaten.

Flies and food.—The important part played by flies in the spread of disease was thoroughly explained in connection with the fly problem.

XIV. AVOID DUST.

Particles of dust have been likened to chariots on which the germs ride, being carried in this way from place to place. It is known to be a fact that a considerable part of the dust on floors, sidewalks, and streets is composed of germs, not all living, to be sure, but many of them alive and simply waiting to be planted on favorable soil in order to multiply and produce disease. Such soil is found in the noses, throats, and mouths of people. Whenever possible, therefore, we should avoid dust. This is one reason why the streets are sprinkled.

Vacuum cleaning is by far the most effective means of cleaning, as well as being the most sanitary way. Vacuum cleaners are now used in many factories and homes, and from the health standpoint they have the great advantage of raising no dust. Excellent as they are, however, they will have to cost considerably less than they do now before they can be used in most homes.



THESE TWO BACK YARDS ARE *ACTUALLY NEXT DOOR TO EACH OTHER*
 Study them carefully; they show the difference in results between shiftlessness
 in one case and a little care and planning in the other.

HOW TO PREVENT SICKNESS

Carpets that are tacked down and cover the entire floor are unsanitary, especially when cleaned by dry sweeping with a broom. Even if the windows are thrown open a good deal of dust is inhaled, and this is unhealthful. Fortunately, hardwood floors and rugs have almost entirely taken the place of tacked-down carpets. The rugs may be taken outside and beaten on the line, and then little or no dust is inhaled.

In sweeping office or factory floors, wet sawdust or pieces of water-soaked newspaper should be scattered on the floor to keep the dust from flying.

XV. HOUSING.

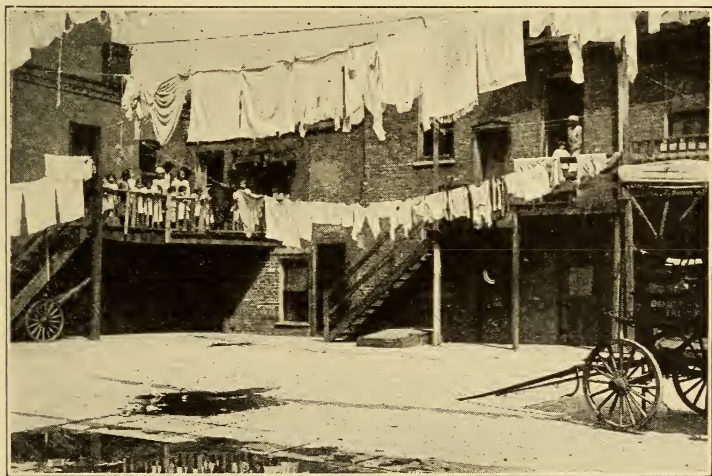
A person's home has a direct bearing on his health. Any one who lives in a bright, attractive, detached house with a yard large enough for a few flowers and vegetables is better off than one who chooses to live cooped up in a dark and gloomy tenement or flat. In other words, those living in a tenement are working under a handicap.

An investigation of the rents charged in the average American city for two or three-room flats showed that while, as a rule, the single house rents for more than the flat—four to five dollars a week in the case of the house, and two and a half to three dollars for the tenement—it is well worth more than the difference in cost.



SIX-ROOM COTTAGE WITH IMPROVEMENTS

This little place, with fruit trees and back yard large enough for a garden, is only twenty minutes' walk from the center of the city; it rents for four dollars and fifty cents a week.



FIFTEEN DIFFERENT FAMILIES LIVE IN THIS COURT

Each has three rooms for which two dollars and fifty cents a week is paid. They are poorly lighted and ventilated and there are no trees or garden space. The cottage rents for nearly double the tenement, it is true; but don't you think it is worth the difference, from a health standpoint?

HOW TO PREVENT SICKNESS

A house has the following advantages over a tenement or flat:

(a) More room. Sometimes by renting a spare room, the cost of the house is brought down to that of a flat.

(b) More sunlight and fresh air, the house being open on four sides.

(c) Garden. Raising vegetables and beautifying a place with plants and flowers are healthful and profitable occupations. Small vegetable-gardens help to reduce the cost of living, and occasionally there will be a surplus over and above the family needs which may be converted into cash. Gardens also promote health by bringing members of the family into the fresh air and sunshine.

PART II

RESISTING POWER; ANTITOXINS AND
VACCINES

(A) Resisting Power

BY "resisting power" is meant the ability of the body to put up a fight against disease germs. It is impossible to keep germs entirely out of the body; a few are constantly entering through the mouth by means of food and water; through the nose by means of the air we breathe; and by way of the skin through the small cuts and scratches which cannot always be avoided. In pointing out the necessity of a clean water-supply, the importance of protecting food from flies and of keeping dirty fingers out of the mouth, the idea was to show you how to avoid taking *millions* of germs into the system. A single germ will not produce a disease, nor will several—you must get a fair-sized dose of them; and even then if your resisting power is good against that particular kind of germ you are reasonably safe. It is very much like a load on a bridge, where the load represents germs, and the bridge the body's resisting power. It is clear that a weak, wooden bridge will stand only a very light load, and that a strong, steel structure will stand an unusually heavy load, but the load can be so great that even the strong bridge will give way. It is just so with the body—it is possible for a

HOW TO PREVENT SICKNESS

strong, healthy person with good resistance to get sufficient germs into his system to make him sick, although this does not usually happen. Our object at all times should be twofold: *first*, to maintain a strong resisting power by attention to food, exercise, and fresh air—keep the bridge strong. *Second*,



THESE ROD-LIKE
GERMS ARE THE
CAUSE OF CON-
SUMPTION

take the least possible number of germs into the system—make the load as light as we can. What you have read so far tells you how to accomplish these things.

The body is constantly engaged in killing off disease germs which enter it every day. Let us see just how this is accomplished. The simplest way to understand how nature protects us against disease is to compare the body with our country. Suppose an enemy attempted to land somewhere on our seacoast; there would at once be a fight between the invaders and our “first line of defense”—the navy and coast artillery. In place of the imaginary enemy, put the germs which cause blood poison; and instead of navy and artillery, the skin, which, in the case of cuts, pin-pricks, and other wounds, is the human first line of defense. Then we have exactly what happens when germs try to invade our bodies. In order to be safe the skin must be unbroken; there must be no cuts or scratches. Just as long as the skin is unbroken

RESISTING POWER

germs cannot enter. We know this to be true, for there are millions of germs on the skin all the time, but they are powerless to harm us as long as the skin keeps them out. The reason we put tincture of iodine on cuts or when the skin is injured is to kill the germs that are sure to be on hand. The iodine does this just as surely as the rapid-fire machine-guns would kill the enemy's soldiers that had been able to make a landing on our shores. Suppose we pay no attention to skin injuries, what happens? Exactly the same thing as if the enemy succeeded in landing a few soldiers at some unprotected spot. They would intrench themselves, wait for reinforcements to come, and advance inland. That is just what the germs do. If not killed at once, they get a foothold and are reinforced by multiplying, because they find ideal conditions to do so in the warmth and moisture of the body. They then advance inward by means of the blood.

To carry the illustration further, the soldiers would not get very far before they met a "second line of defense," perhaps the militia or a patriotic band of citizens hurriedly organized. In the body, these defenders are the white blood cells, and they usually succeed in getting the best of the germs. Suppose, however, that some time passes, the militia loses the battle, and the enemy, much reinforced, prepares to capture the capitol of the country. By this time the regular army is in action and, meeting the invading armies, the decid-

HOW TO PREVENT SICKNESS

ing battle is fought. If our army is too small and poorly trained—inefficient—we would lose and our country would be conquered. Exactly the same thing happens in the body. We have a “regular army” which consists of certain protective substances circulating in the blood. If you are in good physical condition when attacked the germs do not have a chance—they are killed and lose the battle. But if you are poorly nourished, short of sleep and neglect your health in other ways, the germs “take hold” and you stand a good chance of losing, and losing a vital battle with disease germs means but one thing—death.

Resisting power may be of several different kinds:

1. *That which we have when we are born.*—There is no question but that some people have a special protection against certain diseases. Take diphtheria, for instance, one of the contagious diseases. Some people go through life exposed to it occasionally and never contract it. They must have been born with this protection, and, as in the game of tag, when diphtheria comes around, their “fingers are crossed.”

2. *That which is manufactured by the body during life.*—The body has the power of forming antibodies (defenders) when needed, to combat any kind of disease germ which gets into the system. The better the condition of the body at the time, as determined by the amount and kind of food, rest, fresh air, and exercise that we get, the faster

RESISTING POWER

will these antibodies be formed and the greater their number; the result is that the disease is either prevented or cut short in most instances. In fact, the body as a rule goes further than this; it produces considerably more antibodies than are actually needed. This is in line with nature's general policy; the heart, for instance, has a reserve power which fits it for extra or unusual exertion; the air breathed into one lung is sufficient to support life, the reserve being given us in case the other lung should be lost. And so in the matter of disease nature also over-provides. After recovery from many diseases such as measles, scarlet fever, small-pox, and typhoid fever, the extra antibodies formed in the blood, over and above those needed for recovery, remain in the blood throughout life. This is a wonderful provision of nature, for it means that we are permanently protected against such diseases and can rarely, if ever, contract them again.

3. *That which is given to the body.*—The protection from future attacks of a disease as a result of having had such disease, as discussed above, is something which the body has to fight for. It is something like the Belgians' fight for their neutrality—neutrality and independence are good things to fight for, of course, but by fighting for them their country got pretty well battered up in the process. And so the body is often battered up and left in a crippled condition after certain diseases. A person may recover from scarlet fever and never have it

HOW TO PREVENT SICKNESS

again, but in gaining this protection he may have to pay the price of going through life deaf or with a crippled heart. Do you not see, then, the advantage of obtaining protection against certain diseases without the risk or discomfort of even being sick? Medical science has made it possible to do this in the case of diphtheria, lockjaw, meningitis, and a certain variety of pneumonia by means of antitoxins; these will be more fully discussed later under these diseases.

(B) Vaccines and Antitoxins

WHAT THEY ARE AND HOW THEY ACT.—One way to explain the action of these valuable remedies is to use the same illustration we did in explaining the resisting power of the body when we compared germs with enemy soldiers.

VACCINES.—Picture this country at peace, with every one busy at his work and the thought of war very distant in all minds. Can you imagine the effect of the visit of a hostile airship over New York City? Bombs are dropped, destroying buildings, and warnings given that a fleet of airships will soon follow which may be counted upon to destroy or capture our principal cities. There would be but one result of such an occurrence—volunteers for the defense of the country would appear by the thousands and an army of citizen soldiers would be formed at once. It would make

ANTITOXINS AND VACCINES

no difference if the airship and all its crew had been destroyed, so that no immediate danger threatened. The country would be so stirred by what had happened that it would organize for its own defense, so that if the warning should come true it would be ready for the attack. This is not hard to understand, for it is only what every intelligent person knows would happen.

Vaccines act in precisely the same manner. A vaccine is made up of several million dead germs, all of the same kind. By injecting these into the body, antibodies (defenders, or home soldiers) are immediately produced which attack the dead germs and get rid of them. As we saw before, nature produces more antibodies than are actually needed, the extra ones remaining in the blood and serving to protect the body from other disease germs of the same kind that might come in the future. Every disease germ produces different kinds of antibodies which protect only against the one disease. It would be a wonderful thing if protection might be obtained against all germ diseases in this way, but scientists have not as yet been able to discover or grow all the different kinds of germs, although they may be able to do so some day. At present we have a number of vaccines, the most valuable being those of typhoid fever, whooping-cough, and boils or carbuncles.

ANTITOXINS.—In the case of antitoxins, these are produced in animals, usually the horse, in very much

HOW TO PREVENT SICKNESS

the same way that antibodies are formed in people by injecting vaccines. Antitoxins are later injected into people when needed. Like vaccines, they either prevent or cure certain diseases, the most important being diphtheria, lockjaw, spinal meningitis, and a certain form of pneumonia. The formation of antitoxin in horses for use later in people is like raising an army in Canada and sending it over to Europe for the protection of Belgium. Canada has all the effort and expense, while Belgium reaps the benefit; the horse feels sick while manufacturing the antitoxin, but we get the protection without any discomfort or risk.

Given properly by a competent physician, antitoxins and vaccines are harmless and NEVER cause blood poison.

If you have grasped the underlying ideas of what you have read so far, namely, that communicable diseases are for the most part caused by germs, and that the spread of such diseases is brought about by means of these same germs, you will be on the road to your goal—the prevention of sickness. Do not be discouraged if occasionally you have a cold or are sick in some other way. Do not say: “Oh, what’s the use of being careful? I took all the precautions and here I am sick.” Would you be in favor of abolishing the fire department because we still have fires? No, you say, that would be foolish, because there are not as many fires or as bad fires as there would be if we did

ANTITOXINS AND VACCINES

not have the department. It is the same way with sickness; if you take reasonable precautions, you positively will not be sick as often as you otherwise would be, and when you do get sick the attack will be milder and you will get well quicker than you would if you had disregarded the rules of health and sanitation.

PART III

SPECIAL PREVENTIVE MEASURES FOR
CERTAIN DISEASES

(I) Tuberculosis (Consumption)

OF all deaths, tuberculosis is the cause in about one out of every ten. In fact, it is the principal cause of death if we except heart disease. From this it will be seen what a serious problem confronts us if we hope to stamp out this disease. Thirty-five years ago, when the exact cause of tuberculosis was unknown, the disease was much more prevalent than it is to-day. As the cause and prevention of tuberculosis have become understood, however, the death-rate has declined. It is not too much to hope that if our present knowledge is intelligently applied, the next hundred years will see tuberculosis in the same position that smallpox now occupies—a comparatively rare disease and under perfect control.

To understand the prevention of tuberculosis, it is necessary to know a few fundamental facts about the disease. It is safe to say that no disease can affect so many parts of the body as tuberculosis. The lungs, kidneys, bowels, brain, bones, joints, glands, and skin—all may be affected by the germs of tuberculosis. The disease attacks the lungs so much more frequently, however, that

HOW TO PREVENT SICKNESS

for our purposes it will be sufficient to consider just this form of tuberculosis.

The principal source of infection in tuberculosis is the sputum (spit) of persons suffering with bad cases of consumption. Sputum is usually coughed up by such persons and during this act of coughing a fine spray is thrown from the mouth of the cougher which may go for a distance of several feet. Such sputum in the form of spray may contain millions of germs, and carelessness in this respect is one of the main reasons why tuberculosis continues to be such a prevalent disease. Not every one who has tuberculosis expectorates—it is usually only those who have had the disease for some time. These persons are the principal sources of danger and are the ones who should take special care to avoid infecting others. Unfortunately, all persons with tuberculosis are not careful; therefore, it becomes necessary for those of us who are healthy to take certain precautions for our own safety.

AGE AND TUBERCULOSIS.

(A) From birth up to one year of age is the most serious time of life to contract this disease. Babies catch tuberculosis as readily as they do measles or scarlet fever, and almost all of those who do die as a result.

(B) From birth up to the age of fifteen is the period in which most children become infected with

SPECIAL PREVENTIVE MEASURES

the disease, and this is especially true of those living in cities and towns. By "infected" we mean that the germs of tuberculosis have been taken into the system. It is estimated that in the first fifteen years of life nine out of every ten persons become thus infected. This does not necessarily mean, however, that they develop the *disease*, tuberculosis. What happens is that the diseased portions of the lungs are healed by nature by means of a "walling off" process; that is, the germs are surrounded and imprisoned and remain so as long as the general health of the body is maintained. In fact, in such cases these healed spots are really responsible for the comparative protection from tuberculosis possessed by most of us.

Whether or not real tuberculosis develops during this period depends upon two things: (1) The number of germs taken into the system at one time—in other words, the dose. (2) The particular resistance of the child to the germ of tuberculosis.

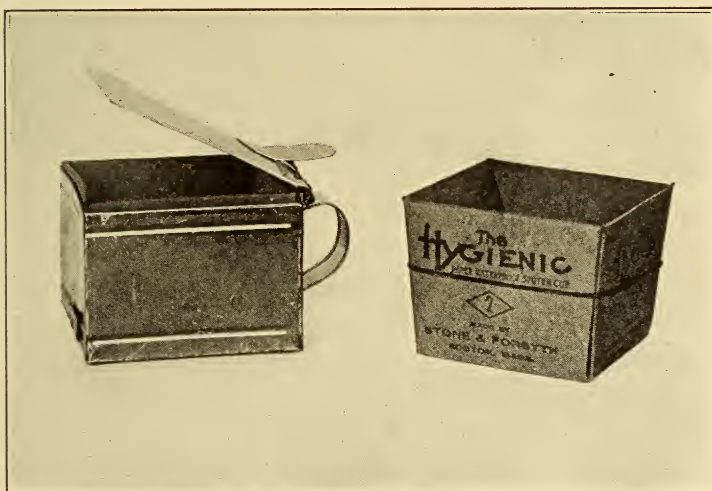
In case one gets a large dose of the germs or is "run down," or both, tuberculosis is apt to start up.

(C) From fifteen to thirty. Between these ages the chances of developing active tuberculosis are the greatest. The danger lies not so much in "catching" the disease from other persons (such as exposure to a careless consumptive) as it does in permitting the body to become run down. Let this happen, and only a few germs are then necessary

HOW TO PREVENT SICKNESS

to start the disease going, and these may easily come from almost any place in cities where crowds gather. What most often occurs, however, is that the infection (which most of us have acquired before we are fifteen) flares up when the body resistance is lowered and permits tuberculosis to develop.

How does a person get run down? This is no mysterious occurrence which "just happens" and which can be charged to "hard luck"; there are certain very good reasons why a person becomes run down. This is brought about by late hours, poor food, bad air in crowded rooms, worry, too much "booze" and other excesses, overwork, overstudy, and a hundred and one other things. Just a word to explain what is meant by overwork. Eight or nine hours of pleasant work every day, in a well-ventilated place, is good for any healthy person, provided he lives properly during the remaining fifteen hours. If such work does not agree with you it is a sign that you are not well and that you should not be working at all. Overwork means putting in ten or eleven hours a day in a dusty or "stuffy" room, taking half an hour to snatch a bite for supper, and then spending the evening teaching, giving dancing-lessons, attending night school, or doing something else which requires close application; in a word, trying to hold down two jobs at once. Perhaps the reason that persons from fifteen to thirty are most apt to develop



WHEN A CONSUMPTIVE EXPECTORATES

He should not "aim at" a cuspidor, or "any old place," but should use a pasteboard sputum-cup with metal container. Once or twice daily the pasteboard cup is taken out and burned and a new one inserted.

HOW TO PREVENT SICKNESS

tuberculosis is because they are just the ones who try to do these things.

The older a person becomes after thirty the less likely he is to develop tuberculosis.

PREVENTION OF TUBERCULOSIS.

(A) *Proper care of serious cases.*—It is best, both for the patient and for the public, that such persons be treated in hospitals or sanatoriums. This prevents scattering enormous numbers of germs. In case the patient does not go to a hospital, the following precautions should be observed:

1. The expectoration should always be deposited in a pasteboard box made for the purpose and burned daily.

2. When coughing in the presence of others, a soft paper napkin should be held before the face and later burned.

3. The teeth should be brushed once or twice daily, over the toilet and not the wash-basin.

4. The sick person's room should be cleaned without stirring up any dust, using a moist cloth or, better still, a vacuum cleaner.

5. The use of separate eating and drinking utensils.

Under such precautions, consumptives make safe companions. This is proven by the fact that physicians and attendants living in hospitals for advanced cases of consumption do not develop tuberculosis as readily as persons working in offices or factories.

SPECIAL PREVENTIVE MEASURES

(B) *Catching the disease in time.*—Gradual loss of weight; loss of energy and ambition and fatigue on slight exertion; pleurisy; spitting of blood; chronic indigestion; persistent tickling cough in the throat—all these are signs that the health is impaired and call for a careful medical examination. Examination should always be made with the chest bare, any expectoration should be examined under the microscope and the temperature should be taken both morning and afternoon for several days. The combination of symptoms mentioned usually means that active tuberculosis is starting. *If treatment is begun at once most cases will recover.*

(C) *Adults.*—1. The rule “keep the body in the best possible physical condition” applies to tuberculosis probably more than to any other one disease. This is accomplished by eating plenty of good, nourishing food, regular hours of sleep and work, and daily exercise in the open air.

2. Avoidance of close exposure to a careless consumptive. By “close exposure” is meant living in the same house, or, worse still, sleeping in the same bed with some one known to be suffering with tuberculosis, or permitting him to cough in your face. The danger is greatly increased, of course, if the sick person refuses to take the precautions given above.

It has not been positively proved whether the greatest chance of contracting tuberculosis lies in exposure to a careless consumptive or by a “flare

HOW TO PREVENT SICKNESS

up" of an infection which is present in nine out of ten of every one of us. Although it is probably by the latter method, either or both are apt to occur. THE IMPORTANT THING TO REMEMBER is that if you keep your general health up to the highest point of efficiency you will be protected against both.

(D) *Infants and young children.*—1. Do not permit your child to live in the same house with a consumptive.

2. Do not take infants in arms into crowded places or street-cars.

3. As tuberculosis may be contracted from cows by means of milk, breast feeding is much safer than bottle feeding. When this is not possible, then be sure that the bottle milk is pasteurized.

(II) Pneumonia

It has long been known that the germs of pneumonia may be found in the mouths of most of us at all times. It was thought that when our resisting power became lowered the pneumonia germs got their chance and that this was the way the disease developed. However, an important discovery made very recently by scientists working at the Rockefeller Institute in New York shows that this is only partly true. They found that there are four different kinds of pneumonia germs and that the variety usually found in the mouth is the least

SPECIAL PREVENTIVE MEASURES

harmful of the four. When the resisting power of the body is lowered, a mild form of pneumonia, due to this particular kind of germ, is likely to result. Severe attacks of pneumonia, however, were found to be due to another kind of germ, which, unlike the one just described, came from some one else suffering with a serious attack of pneumonia. This important discovery means that pneumonia often is a contagious disease and that with pneumonia the usual precautions against contagious diseases should be taken.



THESE GERMS, IN
PAIRS, CAUSE
PNEUMONIA

Having in mind these facts, then, the PREVENTION OF PNEUMONIA is accomplished as follows:

1. Avoid those influences which lower the resisting power of the body. The principal things which do this are the abuse of alcohol and permitting yourself to become thoroughly fatigued. Because men as a class drink more than women and as a rule become more exhausted, this is the reason why there are so many more cases of pneumonia among men. Drinkers are an easy prey to pneumonia.

2. Avoid close contact with any one known to be sick with pneumonia. This is especially important until the doctor makes a test which tells just what variety of the disease is present. If it should prove to be the mild type, extreme caution as re-

HOW TO PREVENT SICKNESS

gards keeping away from the patient will not be necessary.

3. Observe the general measures outlined in the first part of the book, such as care about spitting in public places, care in coughing and sneezing and the use of common drinking-cup and towel.

While it is not a *preventive* of pneumonia, it is well to know that the Rockefeller Institute has

DEATHS FROM PNEUMONIA, BRONCHITIS, COLDS AND GRIP *in New York City*



IN WINTER: IN GO THE PEOPLE. DOWN GO THE WINDOWS.
UP GOES THE DEATH-RATE

produced a serum which is very effective in the treatment of one form of pneumonia. Fortunately for us, this is the commonest form and also the one which is most fatal. As soon as the doctor pronounces a case "pneumonia," a specimen of the sputum should be sent to the health department and in less than twelve hours he will know what type of pneumonia he is dealing with. If it proves to be type 1, the serious type, and the serum is given

SPECIAL PREVENTIVE MEASURES

at once, many lives will be saved which would otherwise be lost.

It is a fact that the death-rate from pneumonia is much higher in winter than in summer. During the months of July, August, and September there are the smallest number of deaths, and in these months the windows are open almost all of the time. The high death-rate in winter is no doubt due partly to the custom of shutting our windows tight and living in an overheated and poorly ventilated atmosphere.

(III) Diphtheria

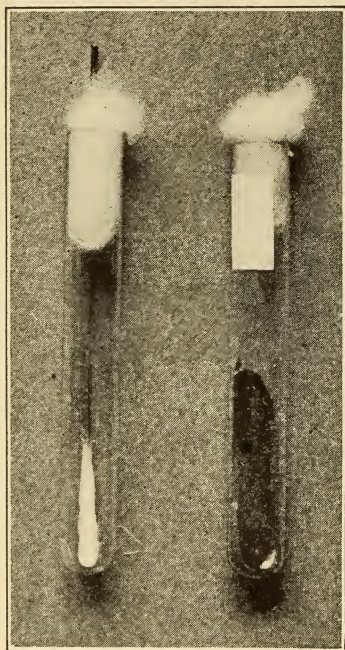
Diphtheria is a contagious disease which affects the nose and throat. A "membrane" forms which partly covers the lining of the nose or throat and in which grow the diphtheria germs. The principal reason why diphtheria is a dangerous disease is because the germs produce a powerful poison or toxin which circulates in the blood, reaching all parts of the body. If the disease is neglected this toxin increases in amount and damages the various organs, particularly the heart, and though it is not always known at the time, diphtheria may in this way lay the foundation for heart disease.

While diphtheria may occur at all ages, it is especially common between two and six. If your child has a sore throat *be sure to call in the doctor at once*; by means of a "culture" he can find out positively whether or not the trouble is diphtheria.

HOW TO PREVENT SICKNESS

CULTURES.

Culture outfits are supplied free of charge to physicians by the health department and consist of two glass tubes. In the first tube is a cotton swab



CULTURE TUBES

fastened on a stiff wire; in the other tube is a small amount of blood serum. Both tubes are then plugged with cotton, after which tubes, swab, serum, and cotton are all made free from germs before use. When used, the swab is rubbed on the tonsils and back part of the throat and immediately rubbed over the surface of the blood serum and the cotton plugs then replaced. The tube containing serum is now placed in an incubator overnight. An incubator is a small oven in which the temperature is kept

the same as that of the human body. If any germs are present they have a chance to grow and multiply the same as they would in the throat. The idea of making cultures is that if

SPECIAL PREVENTIVE MEASURES

only a few germs were rubbed off on the cotton swab we might not be able to find them, but after they have been placed on the right sort of food, and have been allowed to grow and multiply for fifteen hours in the incubator, there will be many millions of them and they can then be readily seen with the microscope.

DIPHTHERIA-CARRIERS.

Before the cause and prevention of diphtheria were well understood it was mistakenly believed that the disease might be made to disappear if every known case of diphtheria was kept away from all other people. We now know, however, that the disease is kept alive by the presence among us of those who are known as "carriers." Carriers are persons who harbor the germs in their throats, although they themselves are apparently perfectly well and have no symptoms of the disease. They can give the germs to other people by coughing or by using the same drinking and eating utensils used by others. The unfortunate fact is that carriers or mild cases of actual diphtheria may give the disease to some one else in its most severe form.

It is known that about one in fifty of all apparently well children and adults are carriers of diphtheria. What does this fact mean? It means that every susceptible child that goes to school is in danger of catching diphtheria from a carrier. A mother may be able to keep her child from those

HOW TO PREVENT SICKNESS

known to have the disease, the school-teachers can prevent such a child coming to school, but neither she nor they can protect a susceptible child from the carrier unless it has first been made safe. There is a way to do this which will be explained shortly. If we are to cause diphtheria to disappear it is not enough merely to treat the actual cases; we must discover and treat the carriers. Only then can we get rid of diphtheria. The carrier is the greatest danger to the public health and he alone allows diphtheria to remain a menace to every one. Only by taking cultures from suspicious throats can we discover and treat the carrier.

SHICK TEST.

You have learned about "carriers," how dangerous they are to every one and how they can give diphtheria to others without themselves being sick. How valuable it would be to you if you could be certain that your child was not liable to catch diphtheria; or, if susceptible, how he might be made free from the danger of taking it. Your doctor can tell you who is likely to catch diphtheria and who is not, after he has made a simple test called the "Shick test."

This is done by injecting two drops of a very weak preparation of diphtheria toxin into the skin of the forearm. If the child has enough natural antitoxin in his system it will use up the two drops of the toxin and nothing will ever show where it was injected.

SPECIAL PREVENTIVE MEASURES

If he has not enough antitoxin, there will be a red mark on the arm about the size of a quarter-dollar. If your child gets this red spot you may know that he is susceptible, and then you should have him vaccinated. After that he is not apt to catch diphtheria. If no red spot of the kind described occurs, he is naturally safe from the disease.

PREVENTION OF DIPHTHERIA.

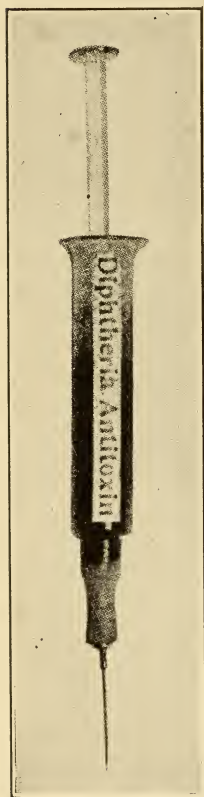
1. Find out who is susceptible by means of the Shick test. This is especially important when a case of diphtheria occurs; all the other members of the family should learn in this way whether or not they have a natural protection against the disease.

2. In case this natural protection is lacking they should either be vaccinated or take sufficient antitoxin to make them safe.

Antitoxin.—You have learned in a general way what antitoxins are; let us see just what diphtheria antitoxin is and how it is obtained. In the first place, a healthy horse is selected; horses are used because they are large, clean, and convenient animals. Then a very small quantity of the diphtheria poison or toxin is injected into a vein. Just enough is injected to make the horse slightly sick. His system immediately begins to manufacture the antitoxin which accumulates in his blood. In a short time the horse is well again and a larger amount of toxin is then injected. This process is kept up until the horse can stand enor-

HOW TO PREVENT SICKNESS

mous doses of the poison without even being made sick, for his blood is now so full of the antitoxin that it joins with the toxin and neutralizes it. Now



DIPHTHERIA
ANTITOXIN

the horse's vein is opened and some of the blood drawn, allowed to form a clot, and the clear blood serum poured off. The antitoxin in the blood serum is then ready for use in curing diphtheria in people. The horse is not injured and in a few days is fully recovered.

The right amount to use and the number of times it should be repeated must be decided by your physician.

Perhaps you may have heard that antitoxin "injures the heart" or "causes paralysis." The truth about the matter is simply this: a crippled heart or paralysis *is* sometimes seen in a person recovering from diphtheria, but these effects are the *direct results of the disease*; the antitoxin simply saves the life of the person and so permits the *effects of the disease* to be seen. Naturally enough, when a person dies from diphtheria he will never

be troubled with a crippled heart or paralysis!

The name "antitoxin" comes from two Greek

SPECIAL PREVENTIVE MEASURES

words meaning "against poison." It is a substance which acts on the poison of diphtheria and renders it harmless—it is really the antidote to diphtheria poison.

3. Keep your child away from children with sore throats or running noses.

The important thing to remember about diphtheria is that *the sooner a culture is made, and antitoxin administered if necessary, the greater the chance of recovery.* The fight against diphtheria calls for quick action, and delay may be followed by serious consequences.

You insure your house and your goods against fire, you insure your life against death and accident. Why not insure your child against the deadly disease, diphtheria?

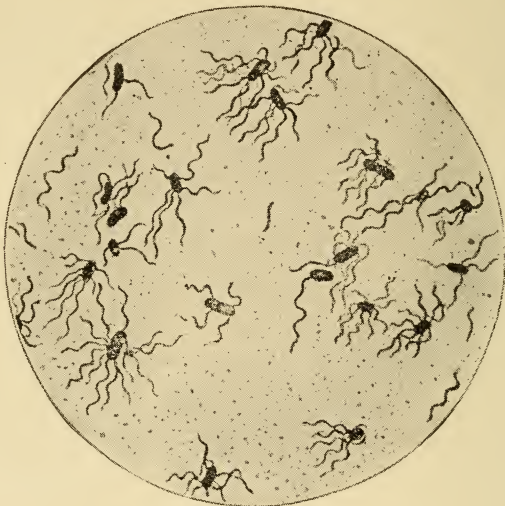
(IV) Typhoid Fever

This is a disease of the bowels, the cause of which is understood perfectly. Typhoid germs enter the body by way of the mouth and attack chiefly the bowels. Here they multiply and cause the lining of the intestines to ulcerate. Typhoid used to be a common disease in the days of wells and outdoor vaults. It is rapidly becoming a rare disease with the introduction of a pure water-supply, the abolition of privies, and the protection of food, especially milk.

Typhoid fever is not contagious; that is to say,

HOW TO PREVENT SICKNESS

it is not contracted in the same manner as measles and scarlet fever, as it cannot be caught by simply being near some one with the disease. You can



TYPHOID GERMS, TEN THOUSAND TIMES ACTUAL SIZE

safely visit a friend with typhoid if you do not shake hands with him or touch any of the articles used by him. The disease is caused in every case by drinking infected milk or water, or by eating food which has been contaminated with typhoid germs by means of "carriers" who have unclean hands.

HOW THE GERMS GET INTO THE BODY.

1. Infected drinking-water. Most cases of typhoid fever are caused by contamination of the water-supply with discharges from the bowels and

SPECIAL PREVENTIVE MEASURES

kidneys of another person suffering with typhoid fever. It is possible for a single person having typhoid to do this (if care is not taken to disinfect the discharges) and cause an epidemic that will sweep through a whole town.

2. Infected milk. Milk may contain typhoid germs when infected water is used to wash the milk-cans, but more often it is because of the unclean hands of the milker.

3. Flies that are permitted to alight on food may have just come from manure or other filth. On their feet may be typhoid germs which are deposited on the food.

So bear in mind that the germ of typhoid fever enters the body by means of "fingers, flies, and food."

TYPHOID-CARRIERS.

There are typhoid-carriers just as it was explained that there are diphtheria-carriers. The carrier is at the present time probably the most common cause of typhoid fever. In typhoid, for example, a person may be a carrier for years after recovery from the disease. The notorious "Typhoid Mary," a cook, was the cause of twenty-six cases of typhoid and of a few deaths because she was daily discharging millions upon millions of typhoid-fever germs; with her unclean hands she conveyed some of these germs to the food which others ate and in this way the disease was spread.

HOW TO PREVENT SICKNESS

HOW TO LOCATE CARRIERS.

A blood test called the "Widal reaction," very simple to perform and requiring but a single drop of blood, shows not only those persons sick with typhoid, but who the carrier is as well. This test should be made on all food-handlers, such as dairymen, cooks, and waiters, in order to know whether or not they are carriers and thus capable of spreading typhoid.

PREVENTION OF TYPHOID FEVER.

1. Wash the hands thoroughly before eating and keep the fingers out of the mouth at all times.

2. Keep flies away from all food by screening windows and doors, especially in the kitchen and dining-room. Bath-rooms and privies should also be screened.

3. See that your milk comes from a first-class dairy—one that is regularly inspected and well rated by the health authorities. Those living in the city should use bottled milk only.

4. Wash carefully with pure water all food eaten raw. This is unnecessary in the case of cooked food, as the process of cooking destroys any germs which may be present.

5. Boil your drinking-water whenever there is any doubt as to its purity. If there are any germs in the water they will be killed by ten minutes' boiling.

SPECIAL PREVENTIVE MEASURES

Practically all city water is safe and requires no boiling.

6. Mix all waste matter from a case of typhoid fever, such as the urine and bowel contents, with chloride of lime, according to the following directions:

Chloride of lime	$\frac{1}{4}$ pound
Water	1 gallon

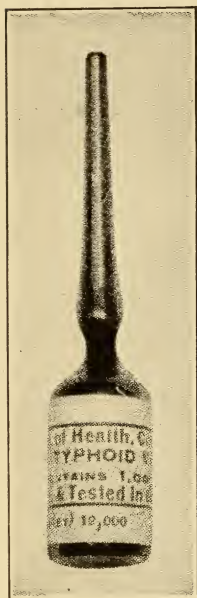
Stir up the water and chloride of lime thoroughly and keep in an earthenware jug. Chloride of lime is cheap and can be bought at any drug or department store. Pour plenty of this disinfectant on all discharges from the bowels and kidneys of the typhoid patient. Be sure that the disinfectant is thoroughly mixed with these discharges.

VACCINATION FOR TYPHOID FEVER.

As a rule, a person in robust health is very resistant to disease. There are, however, certain exceptions, one of which is typhoid fever. This disease seems to attack a person in perfect health about as readily as it does a weakling. Fortunately, we have in vaccination an almost complete protection against typhoid fever. So true is this, that the soldiers of all the leading nations of the world are vaccinated. The result of this measure is that typhoid fever has come to be practically an unknown disease in the armies of the leading nations. In the United States army in 1898 one soldier in

HOW TO PREVENT SICKNESS

every five had typhoid fever and more soldiers died as a result of this disease than were killed in action. Vaccination for typhoid was not practised at that time, but now the entire American army has been



vaccinated, and last year there was not a single death from typhoid among all the troops. This record is due entirely to the thorough system of vaccination against this disease.

If vaccination will stamp out typhoid fever in the army, it will accomplish the same thing for those in civil life. Your family physician will vaccinate you, and the vaccine may be obtained by him for this purpose, free of charge, from either the local or state department of health. The protection is believed to last about three years. It is especially important that persons between the ages of fifteen and twenty-five be vaccinated against

typhoid, as they are the ones most liable to contract the disease. Also, those planning a vacation in the country, or wherever the water or milk supply is not regularly inspected, should consult their physician about the matter of vaccination. Do this a month before leaving town and make an attack of "vacation typhoid" impossible.

SPECIAL PREVENTIVE MEASURES

Typhoid vaccination is absolutely without danger to healthy persons and is strongly recommended.

It is an encouraging fact that the number of deaths from typhoid fever have been cut down *two-thirds* in the past fifteen years. This is probably the most striking result in the campaign to prevent sickness and has been brought about by improved methods of sanitation, such as better water-supply and sewerage systems, the fight against the fly, vaccination for typhoid, and other preventive measures. The thought that typhoid fever has actually been two-thirds conquered in fifteen years' time should spur all of us on to push the fight so that during the next fifteen years this disease will be placed in the same list with yellow fever and small-pox—for all practical purposes, a rare disease.

(V) Smallpox

The cause of smallpox is not definitely known, but because it is very contagious it is believed to be caused by germs or micro-organisms of some sort. Fortunately, smallpox is now a comparatively rare disease, although this has not always been the case. In the Middle Ages smallpox was one of the principal scourges of the world, killing nearly half a million persons each year in Europe alone. In fact, at certain periods, nearly one-half of all deaths were due to this disease, or five times the number now caused by tuberculosis. Unless these

HOW TO PREVENT SICKNESS

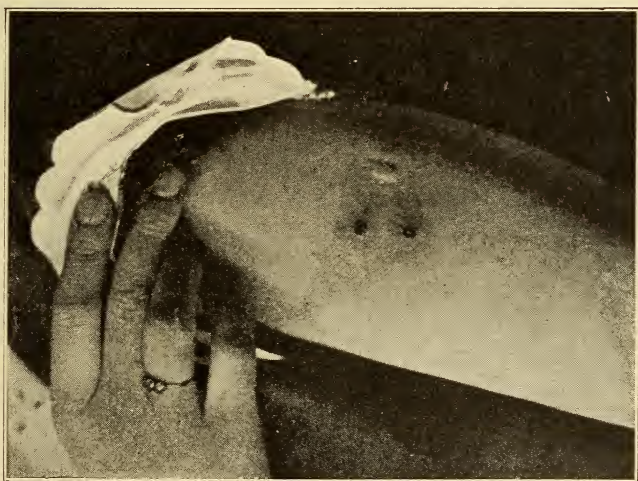
facts were considered, it is impossible to appreciate the value of our present comparative freedom from the disease. Why is it that smallpox is so infrequent now? Did it "just happen"? Did smallpox "naturally die out"? It certainly did not. One thing and one thing alone brought about this remarkable result and that is vaccination.

VACCINATION.

In 1796 Dr. Edward Jenner, a physician practising in the dairy districts of England, was amazed at the beautiful complexions of the milkmaids. Smallpox was very prevalent in England at the time, and the appearance of the milkmaids formed a striking contrast to the pock-marked faces so commonly seen in other persons. At once the idea occurred to Jenner that there might perhaps be some connection between these dairy people having had cowpox and their freedom from smallpox. Investigation bore out his observation, for he learned that all those persons escaping smallpox had at one time or another been sick with cowpox. Soon afterward Jenner performed his famous experiment; this consisted in vaccinating a boy with material taken from a cowpox sore on the hand of the milkmaid. Several weeks later the boy was exposed to smallpox, but the lad did not develop the disease. Again and again he was exposed, and even inoculated with smallpox, but each time, as before, nothing occurred. This was the beginning



WHICH DO YOU PREFER, SMALLPOX, A DISGUSTING AND LOATHSOME
DISEASE, OR



A SIMPLE, HARMLESS VACCINATION MARK LIKE THIS?

HOW TO PREVENT SICKNESS

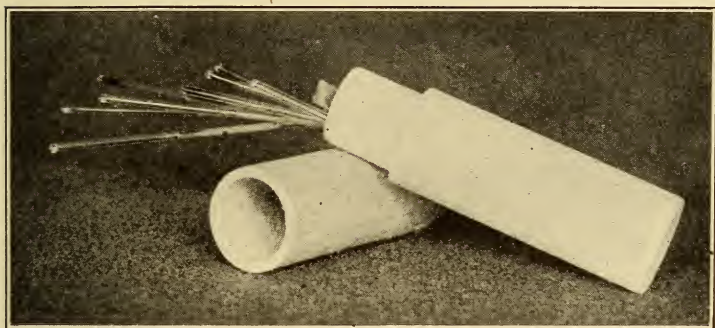
of vaccination, one of the greatest discoveries of medical science. Vaccination is responsible for the practical disappearance of smallpox; in fact, if vaccination could be made compulsory by law for every one the disease would shortly cease to exist.

WHAT VACCINATION REALLY IS.

Briefly, the theory of vaccination is as follows: The germ of smallpox produces in cows a disease known as vaccinia, or "cowpox." This is quite unlike smallpox as seen in human beings. Jenner discovered that inoculation with the material obtained from the sore of a person or animal sick with cowpox protected that person against smallpox. It is this process of inoculating a person with such material that is known as vaccination. When successful, the vaccinated area becomes surrounded by a red ring; soon a blister forms which gradually dries, forms a crust, and drops off. In the unsuccessful cases (when there is no "take") it may be a sign that a person is partially protected by nature, provided, of course, that the vaccination has been properly performed. When a person has been successfully vaccinated he is protected almost absolutely from smallpox for a period of about four or five years; however, in a few cases where the "take" is not perfect, exposure to smallpox might result in a mild attack. Then what happens is that a modified form of smallpox occurs, which is known as "varioid."

SPECIAL PREVENTIVE MEASURES

Cases of blood poison and other troubles for which vaccination has been blamed are due either to unclean vaccine, to lack of proper care in vaccinating, or to interference with the vaccination after-



GLASS TUBES CONTAINING VACCINE

ward in trying to rub it off or picking at it. When unpleasant results occur, they are therefore due to carelessness or uncleanness. This would also happen in the cases of simple wounds that are not properly protected.

The proper ages at which to vaccinate are six months, eight years, and again at about sixteen years. Of course, exposure to smallpox should always be followed by vaccination, even after a period of three or four days, as the disease will either be prevented or made very much milder if this is done. Vaccination should be performed only by a physician or by one specially trained.

It is not our purpose to argue about vaccination,

HOW TO PREVENT SICKNESS

because the subject is really not open to argument—the facts prove conclusively that vaccination protects against smallpox, and because it does this the practical disappearance of a disease which was at one time such a dreadful plague is the result. Four instances will be given, however, which are satisfactory proof of this assertion.

(A) During the Franco-Prussian war there were among the 1,000,000 well-vaccinated German troops but 459 deaths from smallpox; in the smaller but poorly vaccinated French army there were nearly 25,000 deaths.

(B) SMALLPOX RECORD IN GERMANY

In 1874—18,000 deaths in every 100,000 due to smallpox. Compulsory vaccination laws passed in 1874.

In 1881—5 deaths in every 100,000 due to smallpox.
In 1886—1 death in every 100,000 due to smallpox.

In Austria, however, where vaccination was not compulsory during the above period, from 1874 to 1886, the death-rate remained high until 1891, when vaccination became more efficiently carried out, with the result that the number of deaths from smallpox fell rapidly.

(C) SMALLPOX IN HAVANA, CUBA

During the eight years before our army occupied the city, smallpox caused 3,132 deaths.

SPECIAL PREVENTIVE MEASURES

During the next eight years, when vaccination was enforced, there were 7 deaths.

(D) SMALLPOX IN ROCHESTER, NEW YORK

In a small epidemic of smallpox in and about Rochester in January, 1915, personally witnessed by the writer, thirteen out of the total number of fourteen cases had *never* been successfully vaccinated. The one person who did show a vaccination scar had not been vaccinated in ten years; his attack of smallpox was extremely light, however, and at no time was he sick enough to go to bed.

While vaccination almost certainly prevents smallpox, it can also be depended upon to render the disease very mild in those extremely few vaccinated persons who do contract it. So effective is vaccination in preventing smallpox that a person recently and successfully vaccinated may live in a smallpox hospital ("pesthouse") surrounded by patients in every stage of the disease without a shadow of danger.

In spite of the remarkable proofs of the value of vaccination, there are still a few people who, having had little or no experience in the matter, are opposed to its practice and present all sorts of theories other than vaccination to account for the decline of smallpox. It is a significant fact, however, that all sanitary and health experts are agreed that vaccination is a tremendous aid in the prevention and control of smallpox. In countries where vaccina-

HOW TO PREVENT SICKNESS

tion is thoroughly practised, smallpox has been practically conquered, and the disease exists at present only when vaccination has been neglected. There are still about 20,000 cases reported annually in the United States, which shows that the disease is not only present, but, like a smoldering fire, is ready to break out as soon as our attention is taken from it. This is the reason why vaccination should be made compulsory, just the same as it is compulsory to quarantine a case of smallpox. Smallpox can be stamped out and vaccination is the way to do it.

(VI) Scarlet Fever

“Scarlatina” is the scientific name for this disease and does not mean a mild form of scarlet fever. *Scarlatina* is scarlet fever. The cause remains unknown as yet, but is believed to be a germ.

The importance of the disease is realized when we stop and think that nearly one-half of all persons have had scarlet fever. It is usually regarded as a children’s disease, but it seems to affect a grown person almost as readily as a child. In most cases a person who has once had the disease does not get it again. As the heart, kidneys, and ears are often damaged as a result of scarlet fever, it must be looked upon as a dangerous disease. Unfortunately, the damage may follow the mild cases as well as the severe ones, and it is true that a person with a light attack of scarlet fever can pass

SPECIAL PREVENTIVE MEASURES

the disease on to some one else in a severe form. For these reasons it is important for us to try and prevent the spread of scarlet fever as much as possible. Like all other "catching" diseases, it may be prevented if the proper precautions are taken.

PREVENTION OF SCARLET FEVER.

A. The general preventive measures mentioned in connection with "measles" are of equal importance in helping to prevent scarlet fever. Frequent cleansing of the body, face, and hands with *soap and water* is a powerful preventive not only of scarlet fever, but of all other communicable diseases as well.

B. It is important to know how scarlet fever begins, so that you may keep your child away from other persons who may be coming down with the disease. If you know of any one being taken suddenly sick with an attack of vomiting (or convulsions in the case of a child), followed by a sore throat, fever, and a pink skin, suspect scarlet fever and keep your family away from that person.

C. If you have reason to believe that your child has scarlet fever he should be kept away from other people, in a room by himself, and the doctor called at once.

D. The person who takes care of the patient should make it a rule to slip on a loose gown or kimono over the clothes when entering the sick-room. Before leaving, hang this gown on a hook

HOW TO PREVENT SICKNESS

in the sick-room and proceed to wash the hands thoroughly with soap and water; this should be done every time.

E. It goes without saying that a person ill with scarlet fever should have his own dishes, utensils, and bedding. All these things should be washed separately and disinfected before being used by any one else; the dishes by ten minutes in boiling water, the bedding by formaldehyde or as otherwise directed by the physician.

F. Any discharge from the patient's mouth, nose, and throat should be received into pieces of old linen or gauze, and these burned soon afterward. The reason for this is that the disease is believed to be spread mainly by means of these discharges. The scales and "peeling" of scarlet fever have nothing whatever to do with spreading the disease.

G. A child recovering from scarlet fever should not return to school for at least four weeks. This time can be profitably spent in resting and building up.

(VII) Measles

Measles is doubtless a germ disease, but the particular germ that causes it has not yet been found.

The saying that "Familiarity breeds contempt" is true in the case of measles. It is such a common disease, and so many of us have had it, that we are apt not to take it seriously. Yet it is really a dangerous disease and causes more deaths than

SPECIAL PREVENTIVE MEASURES

scarlet fever. Besides, it is a frequent cause of deafness, and an attack of measles often leaves a child so weak that it falls an easy prey to pneumonia. Measles may occur at any age, but is, of course, much more common in children and is also more dangerous at that time.

PREVENTION OF MEASLES.

Unfortunately, we have as yet no special means of protection against measles, as in the cases of smallpox and typhoid fever. We must rely on the general preventive measures outlined in the first part of the book, such as cleanliness of the face and hands, the use of our own towel and drinking-cup, keeping the fingers out of the mouth, and daily brushing of the teeth. There are a few points, however, which should be emphasized.

A. Keep your child away from other children who have measles. Be suspicious of measles when a child begins to cough, has a "running" nose, has red, watery eyes, and avoids the light. If, in addition, the child is feverish and you notice an eruption on the forehead near the hair or behind the ears, you may be certain the trouble is measles.

B. It is important to know that you can often see the beginning rash of measles on the inside of the lips and cheeks a day or so before it breaks out on the skin. The spots appear as little rose-red, pink-in-the-center specks. If you see these

HOW TO PREVENT SICKNESS

you may *know* that the child has measles, as they do not occur in any other disease.

C. If your own child has measles (and you can tell a little in advance by the spots in the mouth), or if he shows the first signs of the disease such as sneezing, coughing, and watering of the eyes, he should be quarantined; that is, *keep him away from other children* and members of the family and then call a doctor.

D. The discharges from the nose and throat contain the germs of measles, and soft paper napkins or old linen cloths should be used, and burned soon afterward.

(VIII) Chicken-pox

Chicken-pox, though quite contagious, is not a serious disease. It causes a "breaking out" on the skin very similar to smallpox and is of importance mainly because of this fact. A severe case of chicken-pox may be more disfiguring than a mild case of smallpox. Because of the skill and experience required in deciding whether a certain case is chicken-pox or smallpox, mistakes are often made, with a result that an epidemic of smallpox gets under way before it is recognized.

PREVENTION OF CHICKEN-POX.

1. Report promptly to the health officer the case of any member of your family that is sick with what you think is "chicken-pox." It may pos-

SPECIAL PREVENTIVE MEASURES

sibly prove to be smallpox, and if it does you certainly want to know it. The health officer is usually the one who is best able to decide the matter.

2. Keep children with chicken-pox out of school and away from other children until the eruption has disappeared.

(IX) Whooping-cough

Whooping-cough is a dangerous, catching disease, most common in children and caused by a certain germ, recently discovered.

AGE AND WHOOPING-COUGH.

The majority of cases of whooping-cough occur in children under the age of five, and one-half of these are in babies not yet one year old. Whooping-cough is very fatal in babies less than one year of age, and in consequence one child out of every four who has the disease does not recover.

SERIOUSNESS OF THE DISEASE.

Too often people refer to this disease as "only an attack of whooping-cough" and look upon it as something that does not amount to much. They seem to have a wholesome dread of infantile paralysis and quite a little respect for scarlet fever and diphtheria, but are inclined to treat whooping-cough rather lightly. What are the facts, however? In 1915 whooping-cough in Rochester, New York, killed more persons than scarlet fever and diph-

HOW TO PREVENT SICKNESS

theria combined, and caused ten times more deaths than infantile paralysis! When we consider that there is a vaccine which will prevent whooping-cough in over half of those who are vaccinated, and that this fact has been widely advertised in the newspapers, it seems a pity that the disease is permitted to go on killing people when we have the means for fighting it so successfully.

The danger of whooping-cough lies not only in the disease itself, but in the fact that pneumonia is a frequent complication and also that it paves the way for tuberculosis later on in life.

PREVENTION OF WHOOPING-COUGH.

A. Regard as whooping-cough every case of jerky, spasmodic cough with a flushed face, especially a cough that is worse at night or which is followed by vomiting.

Regard as suspicious any cough in young children and keep your children away from them. The reason for this is that whooping-cough is spread by the person who has it when he coughs or sneezes at some one else. The fine particles of spray coughed up or sneezed out contain the germs and may give your child the disease.

B. In case your own child has whooping-cough, keep him away from other people, as whooping-cough lasts such a long time (several weeks and sometimes months). It is not necessary to shut up the child in one room or to keep him continually

SPECIAL PREVENTIVE MEASURES

in the house. The important thing to remember is that the disease is contagious as long as the cough lasts, and that the child should be kept away from school or from coming into close contact with people during this period.

C. *Vaccination*.—As there is so little to be done for whooping-cough after it has started, and considering the harmlessness of whooping-cough vaccine, the best thing for us to do in the case of whooping-cough is to try and prevent it. By means of a vaccine, recently discovered, it is possible to accomplish this in over one-half the cases; that is, over one-half of those who are vaccinated for whooping-cough do not contract the disease when directly exposed to it. Remembering that most of the deaths from whooping-cough are in babies under one year of age, you will understand how important it is to vaccinate children for the first time when they are a few weeks old. The protection lasts about three years, after which they should again be vaccinated. Children up to the age of ten who have not been specially protected from whooping-cough in this manner should be vaccinated at any time during this period. The vaccine will be given by your physician in the same manner as a hypodermic injection, and may be obtained by him, free of charge, at the health department. As whooping-cough is a child's disease, it is unnecessary that adults be vaccinated. When the disease does develop in adults it is seldom serious.

HOW TO PREVENT SICKNESS

(X) Infantile Paralysis

Because of the epidemic of infantile paralysis in New York City in 1916, when there were 9,418 cases, there was much discussion of the subject, both in the newspapers and among people generally.

WHAT INFANTILE PARALYSIS IS.

Infantile paralysis is an inflammation of the spinal cord caused by a living germ so small that it cannot be seen with the ordinary lenses of the microscope. The germs have been shown to exist in the discharges from the nose and throat of a person sick with the disease, and infection in a new case is believed to take place through the same channels. As a result of such inflammation of the spinal cord, certain nerves may be damaged. When this happens the muscles which they control lose their power, becoming weak and sometimes completely paralyzed. That is the reason for the name of the disease.

AGE AND INFANTILE PARALYSIS.

The name is misleading in one way, however, as many people think the disease is confined exclusively to children. This is not true, for it may attack persons of almost any age and, further, it is apt to be quite fatal in the case of adults. However, about nine-tenths of all cases of infantile paralysis are in children under the age of five, and

SPECIAL PREVENTIVE MEASURES

about four persons in every five who have the disease get well.

Our knowledge of infantile paralysis is still somewhat incomplete; that is, the facts relative to its manner of spread are not as clear at the present time as in the case of typhoid fever, a disease that we know all about and understand perfectly. This does not mean, however, that we have no information on the subject, for such is not the case. Furthermore, scientific men of great skill are working constantly on the problem and there is every reason to believe that the time is not far distant when we will have a test enabling us to tell those who are likely to catch the disease, as we now have for diphtheria. And it is also probable that we will have some remedy for the disease, as we have in the case of antitoxin in diphtheria.

CARRIERS.

It has been noticed that an occasional case of infantile paralysis sometimes develops in a place far removed from the scene of an epidemic, which later turns out to be the *only* case in that locality. If infantile paralysis is contagious, and if there is no one else sick with the disease, how can this occur? The only satisfactory explanation is that there must be persons who are capable of carrying the infection and giving it to others without in themselves having the disease or showing any signs of sickness.

HOW TO PREVENT SICKNESS

The first signs of infantile paralysis are fever and pain or soreness in the muscles of the arms or legs, which makes the affected person cross and irritable. If a child appears to be weak in its arms and legs, take no chances, but keep it away from other people and call your physician.

As infantile paralysis is not always with us like measles and scarlet fever, it is only necessary then, for practical purposes, to consider the proper precautions to take in time of an epidemic.

PREVENTION OF INFANTILE PARALYSIS.

A. Call a physician or notify the health department if you have reason to suspect that infantile paralysis is in your family.

B. Screen all open windows and doors and keep household pets away from the children. As epidemics of infantile paralysis occur during the warm weather, flies are believed to have some part in the spread of the disease; screening, therefore, is an important precaution.

C. As far as possible, try and keep children in their own yard and away from other children.

D. Keep children away from picnics, theaters, street-cars, railroad trains, or, in fact, wherever people gather.

E. The general precautions regarding the common drinking-cup, wash-cloth and roller towel, mentioned so often before, are of particular importance in time of an epidemic of infantile paralysis.

SPECIAL PREVENTIVE MEASURES

sis. Children should also be warned to keep their fingers out of their mouths and noses, and when sneezing or coughing to hold their handkerchief in front of their face. The hands should be washed with soap and warm water before each meal, after each visit to the toilet, and before going to bed.

F. Allow no one to kiss your child during an epidemic.

G. In case you have children, try and persuade relatives and friends to postpone their visits until after the epidemic. They may act as carriers of the disease.

(XI) Common "Colds"

"Colds" is hardly a name for these disorders, as the effects of cold alone cannot produce "colds." Explorers in the Arctic regions, exposed to extremely low temperatures for long periods of time, are remarkably free from colds.

Simply because every one of us has had many colds and has always recovered, and because colds in themselves never prove fatal, it is a great mistake not to take them seriously. Surely every one can recall, if he stops to think, of the case of a friend or relative whose cold "ran into" pneumonia, consumption, or some other equally serious trouble. This is the reason why colds are dangerous and why we should do our best to prevent them.

HOW TO PREVENT SICKNESS

HOW WE CATCH COLD.

Germs produce colds, and the way they do it is as follows: The germs concerned in colds may be of several different kinds, those which cause blood poison or pneumonia or grip—all these are capable of producing colds, but the important fact in this connection is that the germs mentioned may act in two different ways. They may be weak and harmless, as they are most of the time; we know this to be so, for it can be shown that they exist in the mouths of all of us at all times, even though we are well. Let the body become run down, however, with our resistance lowered in consequence, and these same germs, ordinarily held in check, become active and cause a cold. Now these active germs in a person suffering with a cold make it contagious in the same way that grip or one of the forms of pneumonia is contagious.

The prevention of colds, therefore, depends principally upon keeping up the general health of the body, and at the same time avoiding those things which are especially apt to suddenly lower the resistance and also avoiding close contact with any one suffering with a cold. Special points in this connection are as follows:

A. To maintain the body resistance in order to keep the germs in the nose and throat quiet and harmless—

1. Avoid sudden changes of temperature, such

SPECIAL PREVENTIVE MEASURES

as going from a warm room to the chilly outdoors without an overcoat.

2. Avoid chilling of the body from wet clothing and avoid especially wet feet. Wearing rubbers will keep the feet dry.

3. Get rid of adenoids, as these growths cause a chronic catarrh and favor the frequent occurrence of colds.

4. Breathe as little dusty air as possible. That is one reason why colds are so frequent in cities in the late fall and early spring when the streets are not sprinkled and when the dust flies in clouds in our faces. The dust is not only irritating, but actually contains "cold" germs.

5. Avoid overheated rooms (over 72°) and excessively dry air.

6. Sleep with windows open. A sleeping-porch is still better, except in damp or extremely cold weather.

7. Accustom the body to sudden changes of temperature by taking a cold sponge-bath over back and chest and neck every morning; follow this by vigorous rubbing with a rough towel.

B. To prevent the spread of colds—

1. Avoid stuffy theaters and crowded street-cars.

2. Avoid close contact with friends who have colds, especially those who are coughing and sneezing. Kissing is probably the quickest and surest way to catch a cold from some one else.

HOW TO PREVENT SICKNESS

3. If *you* have a cold, use handkerchiefs of cheese-cloth or old linen, and burn them.

ABOUT DRAUGHTS.

Many people believe that they sat in a draught and "therefore" caught cold; what they most needed was not so much to avoid draughts as to keep in such condition that draughts would do them good, not harm. When you are inclined to blame a draught for your cold, remember that it is not the engineer or fireman on the train who catches cold, but the passengers in the warm, poorly ventilated coaches.

THE MOST IMPORTANT THING OF ALL IN THE PREVENTION OF COLDS IS TO KEEP YOURSELF IN GOOD PHYSICAL CONDITION BY GETTING SUFFICIENT SLEEP, FOOD, AND FRESH AIR. If this is neglected the other precautions, alone, are not apt to protect you.

(XII) Grip

The correct name for grip or *la grippe*, as the French originally called it, is influenza. Grip and influenza are one and the same thing.

Both the way in which grip starts and spreads, together with its means of prevention, are so nearly like the case of common colds that the subject will not be discussed separately.

SPECIAL PREVENTIVE MEASURES

(XIII) Malaria

Only in certain sections of the United States is there any danger of contracting malaria. These localities are indicated by the shaded portions of the map on page 60, and a glance will show that the malarial sections exist chiefly in the Southern states. Now and then a case of malaria is seen in the North, but investigation usually shows that the disease was contracted elsewhere.

HOW MALARIA IS SPREAD.

Malaria is spread by a certain kind of mosquito called the *Anopheles*. When this mosquito bites a person sick with malaria the insect sucks the blood which contains the malarial parasite (germ). Later on, when a well person is bitten by this same mosquito, the parasite of malaria is planted in his blood and in this way the disease is spread.

Few problems in the prevention of disease are better understood than that of the prevention of malaria. We know the exact cause of the disease, how it is transmitted and what to do in order to prevent its spread. Nothing remains to stamp out the disease but the practical application of this knowledge.

PREVENTION OF MALARIA.

1. *Destroy the mosquitoes.*—The way to do this is fully explained in section B, Part I.

HOW TO PREVENT SICKNESS

2. *Avoid mosquito-bites.*—This is accomplished by screening the windows and doors of houses and also porches used for sitting outside in the evening. As mosquitoes are usually active only after sunset, the ankles, neck, and arms should be protected from the bite of the mosquito after dark. A practical point in this connection is to rub these exposed parts of the body with some substance that is distasteful to mosquitoes. Good preparations for this purpose are oil of citronella, oil of lavender, or a mixture of equal parts of these oils. Another method is to burn “joss-sticks,” which develop a smoke, the fragrance of which is quite pleasant to most of us, but which mosquitoes do not like and therefore avoid. In the woods, nothing is more efficient than a smudge made by placing green boughs or wet leaves on camp-fires.

3. *Quinine.*—In sections known to be malarial and where the disease is prevalent, it is customary to take regularly two grains of quinine at meal-time three times a day during the mosquito season, which is usually from June to November. The two-grain capsules are the best preparation and may be taken daily during this period without any harm resulting from their use.

(XIV) Summer Diarrhea

It is common knowledge to all of us that diarrhea is much more frequent in summer than in winter;

SPECIAL PREVENTIVE MEASURES

in fact, few of us manage to get through a summer without at least one upset of this sort. The reason for this is easily explained. In summer, food spoils readily, and unless precautions are taken flies feed upon it. Thus it becomes contaminated, and when eaten diarrhea is the result. The importance of this matter is difficult to realize unless we compare this trouble with some other better-known disease. It is a fact that summer diarrhea, or "summer complaint," kills *six times* as many people every year as die from typhoid fever. Think of it! Is it not worth a little trouble and precaution on our part to prevent this terrible waste of human life? As five-sixths of the victims of summer diarrhea are helpless infants under two years of age, it is certainly up to us to protect them, and it is possible to do this to a great extent.

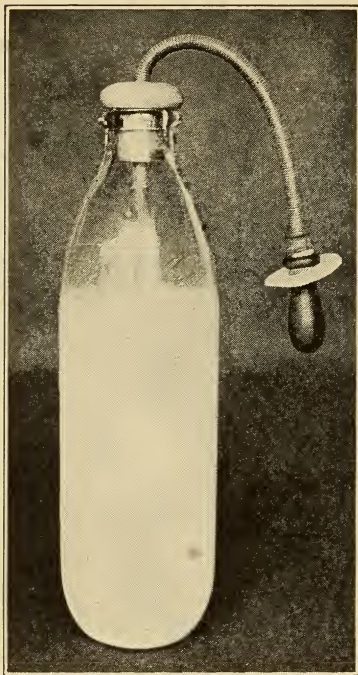
PREVENTION OF SUMMER DIARRHEA.

1. *Keep flies away from food.*—This was thoroughly discussed in connection with the subject of "Flies" and "Typhoid Fever," and the importance of screening all parts of the house, especially the kitchen, dining-room, nursery, and privy, was pointed out.

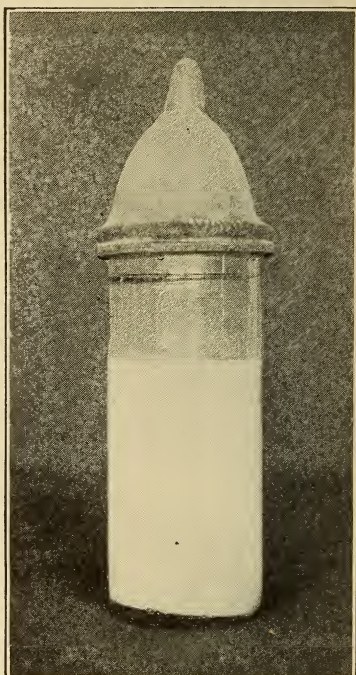
An experiment was conducted in New York City by the Health Department a year or so ago in the homes of over a thousand infants. One of the results went to show that almost twice as many infants had diarrhea when exposed to flies as was the case among the fly-protected infants.

HOW TO PREVENT SICKNESS

2. Don't patronize any restaurant, grocery, or market where flies are permitted to alight on food.
3. Keep the baby on the breast and away from



THIS FEEDING-BOTTLE IS DANGEROUS BECAUSE IT CANNOT BE KEPT CLEAN



THIS BOTTLE IS EASY TO CLEAN AND IS THEREFORE SAFE

the bottle, especially in the summer-time. The New York City experiment referred to showed that about two and one-half times more bottle-fed babies were attacked by diarrhea than breast-fed infants. When the baby is fed artificially, and

SPECIAL PREVENTIVE MEASURES

when the bottle is exposed to flies, the danger is especially great.

4. If the use of the bottle is necessary, do not by any means buy the old-fashioned kind with a small mouth and rubber tubing; it is *dangerous* because it is impossible to keep it sanitary. The wide-mouth bottle shown is the best kind to use.

5. Maintain general cleanliness about the house. This means keeping things "picked up" and in their proper places, all rubbish disposed of, frequent house-cleaning, and the maintenance of sanitary conditions in general. The experiment showed that almost twice as many infants had diarrhea in dirty homes as in clean homes.

(XV) Lockjaw

HOW LOCKJAW ORIGINATES.

Fortunately, lockjaw, or tetanus, is a rare disease, although the chance of its occurrence is always present. This chance is greatly increased under certain conditions. The germs of lockjaw are most apt to exist in street and stable dirt or in garden soil. As these germs do not grow well when exposed to air, punctured wounds are the most dangerous. By punctured wounds is meant those made by a nail or sharp object which penetrates the flesh for some distance, but which makes only a tiny hole in



THESE ARE THE
GERMS OF LOCK-
JAW

HOW TO PREVENT SICKNESS

the skin. Tetanus germs planted deep in such wounds find conditions ideal for their growth. Other wounds which are dangerous are those in which there is considerable crushing or tearing of the flesh; in such cases the germs of lockjaw may be ground into the tissues. When such injuries as punctured or crushing wounds are contracted in the streets or about stables, they become doubly dangerous. Since the more sensible celebration of the Fourth of July, cases of lockjaw from the explosion of toy pistols are much less frequent than formerly.

PREVENTION OF LOCKJAW.

1. Thorough opening of deep, punctured wounds at once.

2. Disinfection (cauterizing) with pure carbolic acid which is immediately neutralized by grain alcohol. Tincture of iodine is then freely applied and the wound kept open by a strip of clean gauze.

3. *Tetanus antitoxin*.—In all doubtful or serious cases, antitoxin should be given within twenty-four hours after the injury. This method of prevention is similar to that employed in diphtheria and is without danger. Its value lies chiefly in *preventing* lockjaw from developing, as it does little, if any, good after the disease has set in. As a preventive, however, its action is sure and certain and every one should know that such an antitoxin exists

SPECIAL PREVENTIVE MEASURES

and insist on its use in cases similar to those described above.

The disinfection of punctured wounds and the decision as to whether or not antitoxin should be used must rest entirely in the hands of the physician.

(XVI) Rabies (Hydrophobia)

As all of us know, hydrophobia is due to the bite of a rabid animal, usually the dog. The disease is caused by an unknown poison present in the saliva of the dog, which is introduced into the system when the skin is broken by the teeth of the animal.

THE PASTEUR TREATMENT for hydrophobia has cut down the deaths in this disease so much that where sixteen in every one hundred of those bitten used to die, now only one succumbs, when given the Pasteur treatment. To be of value it must be given before the person bitten actually becomes sick (usually from twenty to forty days). After this it is of no use, as none of the cases ever recover.

(XVII) Spinal Meningitis

This disease is, fortunately, infrequent, although it occurs in large cities occasionally. It is caused by a known germ.

FLEXNER'S SERUM is a wonderful remedy for meningitis, amounting almost to a specific. Since

HOW TO PREVENT SICKNESS

its discovery the deaths from this disease have been cut down four-fifths.

(XVIII) Tapeworms

The three principal kinds of tapeworms are those which grow in hogs, cattle, and fish. The one from hogs is by far the most serious, but, fortunately for us, it is rare in this country. Tapeworms are produced in people by eating pork, beef, or fish which contains tapeworm eggs embedded in the flesh. From these eggs, tapeworms develop in the intestines, and then, through the improper or careless disposal of sewage, healthy hogs, cattle, and fish become diseased, and so the thing goes on in an endless chain. The solution of the tapeworm problem lies clearly in breaking this chain.

PREVENTION OF TAPEWORMS.

1. On farms or in camp, make certain that hogs or cattle do not have access to sewage either directly or indirectly by drinking water from streams which have been polluted near by. Infection of fish in the latter way is frequent.

2. *Cook completely* all pork, beef, and fish. If this is done there will be no danger, as the tapeworm eggs are killed by the heat developed in thorough cooking.

SPECIAL PREVENTIVE MEASURES

(XIX) Trichina

The question of trichina was discussed in connection with the subject of "Rats." It was shown how rats were the original animals which harbored the trichina, and how hogs became infected by eating these same rats. The only thing, then, necessary in order that a person may contract this serious and painful disease is that he eat diseased pork which has been carelessly prepared.

PREVENTION OF TRICHINOSIS.

This depends upon two things:

1. Keep rats away from all pig-pens, slaughter-houses, butcher shops, or other places where live hogs are kept. The way to do this has been explained.

2. Cook *thoroughly* all pork that is eaten. It is very important that this kind of meat be completely cooked. There is nothing in the appearance or odor of "measly" pork to warn us, consequently our main protection lies in thorough cooking.

(XX) Infected Wounds (Blood Poison)

While blood poison can hardly be classed as a communicable disease, still, as it is caused by germs that we know all about, and as it is *absolutely preventable*, it will be considered here.

HOW TO PREVENT SICKNESS

Nature will heal a wound very rapidly if it is clean. It is not enough for the wound to simply look clean; it must be entirely or nearly free from germs. When a wound heals under these conditions we have what is termed "healing by first intention."

If we do not keep the germs out of a wound or do not get them out after they are in, then the healing process of Nature may be interfered with to such an extent that infection takes place; pus is formed by Nature in her effort to fight the germs, and the best that we can then expect is what is called "healing by second intention."

Remember that these germs are on our skin, on the tools we use—in fact, everywhere about us, waiting for a chance to gain entrance to the body; there, under the influence of warmth and moisture, they multiply rapidly. A break in the skin gives the germs their opportunity; having entered, they throw off poisons which irritate the wound, and, circulating in the blood, produce fever and headache.

A wrong impression that many have is that one is likely to "catch cold" in a wound; this is a mistake. You can "catch cold" on the chest, but not in a wound. What you *can* catch in a wound are germs, and this is the principal thing to bear in mind and avoid.

An infected wound may prove so serious that a finger, hand, or arm may be lost, and it sometimes

SPECIAL PREVENTIVE MEASURES

happens that even death results from small neglected wounds. These facts should impress every one with the necessity of properly caring for every wound, no matter how small.

The common name for infection is "blood poison," and it is attended with pain, redness, and swelling of the part. It may safely be assumed that in all cuts, scratches, hang-nails, etc., at least a few germs get in. If such wounds become infected in consequence, they are very likely to lay a person up for some time, and as an infected wound is entirely unnecessary provided the proper precautions are taken, it is important to have such precautions clearly in mind.

The New York State Industrial Commission found, in studying a series of five thousand cases of small injuries, such as cuts, scratches, and punctured wounds, that seventeen in every hundred became infected. The records of the Commission showed that this happened when the cases received improper treatment or were not treated at all. More than this, the average case of infection forced the employee to lay up for over two weeks. "All right," you say. "What has all this got to do with me?" It has a great deal to do with every one of us. What one of us can say that not once during the past year has he cut his hand or fingers or face? Who has not stuck himself with a pin or a sharp instrument? Who has not had a "hang-nail" or a break in the skin of some sort? Very

HOW TO PREVENT SICKNESS

few. These are the cases, however—the little things—that made up the record of the Industrial Commission. The big injuries are not usually the ones that develop blood poison. There are two reasons for this: first, a doctor is quickly called; and, second, there is a free flow of blood which helps to wash away the germs and to kill those which remain. But the little breaks in the skin—the ones that bleed slightly—are the ones most apt to become infected. Don't be ashamed to give them proper treatment, no matter how trifling the injury may seem to you. It takes but a few moments and may save you days of pain and disability. There is no mystery or secret about how you may almost surely prevent a wound from becoming infected and causing blood poison.

PREVENTION OF BLOOD POISON.

1. Cleanse with gasolene. This is accomplished by thoroughly scrubbing the skin surrounding the wound with a cloth wet with ordinary automobile gasolene. Then take a fresh piece of cloth, also wet with gasolene, and scrub the *wound itself*. Keep water away from the wound, as it interferes with the success of this method.

2. Apply tincture of iodine. *Tincture of iodine does to germs what arsenic or strychnine does to rats*—it kills every germ it touches swiftly and surely. Wrap a small piece of cotton on the end of a tooth-pick or match (first breaking off the head), saturate

SPECIAL PREVENTIVE MEASURES

with tincture of iodine, and then paint the wound and surrounding skin with it.

3. Cover the wound with a piece of surgical gauze, several layers in thickness, and hold in place by a bandage. A clean piece of linen or cheese-cloth will answer, but the gauze is better.

4. Wet the whole dressing thoroughly, gauze and bandage, with a mixture of half alcohol and half water. Leave this dressing on for several days, and if the directions are carefully followed you may be reasonably certain that healing will take place promptly.



(XXI) Common Skin Diseases

The three common skin diseases that are kept going by being passed on from one person to another are scabies ("the itch"), lice, and ringworm.

THE VITAL PART IN
THE PREVENTION OF
BLOOD POISON

SCABIES.

"The itch" is caused by a tiny parasite which buries itself under the skin and produces intense itching. Any one with this trouble is pretty sure

HOW TO PREVENT SICKNESS

to exhibit long scratch marks on the skin in various parts of the body; these are due to violent scratching. The disease is spread by means of clothing, bedding, towels, etc. All children having scabies are excluded by the school physicians from school until they are cured.

LICE.

These parasites are found in the hair (head lice) or on the body, and are very common in children. Lice multiply by laying eggs which are known popularly as "nits." As they are very easy to acquire, no one should be blamed for *having* lice, but only for *keeping* them. Lice are spread by wearing other peoples' hats, using their combs and brushes, wearing rented swimming-suits, sleeping in cheap lodging-houses, and in other similar ways.

In the case of head lice the hair should be cut close or a fine-tooth comb used. If crude petroleum is then applied it will usually kill the few remaining lice. Children with lice should never be permitted to attend school.

RINGWORM.

This is *not* due to a worm, but to a fungous growth on the skin. Ringworm grows from the outside, clearing up in the center as it gets larger, and thus

SPECIAL PREVENTIVE MEASURES

produces a ring, for which the disease is named. It is communicable and is spread in about the same way as lice or scabies.

Painting a ringworm spot daily with tincture of iodine usually causes it to disappear in a short time.

PART IV
CHRONIC DISEASES OF ADULT LIFE

Chronic Diseases of Adult Life

WE are now going to consider those diseases which, though not in any way communicable, are in a large measure preventable. The ones most commonly met with and which cause the greatest loss of life are diseases of the heart, kidneys, and blood-vessels, and cancer. In fact, heart disease is responsible for more deaths than any other one disease, not even excepting tuberculosis, and more than twice as many people die as a result of heart trouble as are killed by cancer. The four diseases mentioned above are among the seven leading causes of death.

PUBLIC HYGIENE.

Those diseases which we have been considering, such as typhoid fever, tuberculosis, smallpox, measles, and diphtheria, are all capable of being passed on from one person to another. On this account the public health authorities have taken an active hand in their control, and as a result there has been a very gratifying reduction in the total number of cases. The control of diseases of this character is accomplished by what is known as

HOW TO PREVENT SICKNESS

“public hygiene,” which means that laws have been passed which compel people to take certain precautions which are known to prevent and check the spread of these diseases. Of course, education and intelligence on the part of the individual are necessary parts of the plan, as we have seen, such as screening our houses against flies, care in coming in contact with those persons sick with communicable disease, avoidance of infected food and water, and the many other general precautions which have been explained. But perhaps the greatest reduction in these diseases has been accomplished by the health authorities in compelling us to live up to the vaccination laws, in quarantining contagious diseases, by insisting upon certain regulations in connection with our food and water-supply, and in keeping contagious diseases out of the country by the examination of all immigrants.


INDIVIDUAL HYGIENE.

But how about the chronic diseases of adult life? Do the health authorities have any control over these? No, not in any way. You can drink yourself to death, you can gorge yourself with meat three times a day, you can sit quietly at home or in the factory all day long and not get a bit of exercise, or you can “hit the pace” as fast as you want to, and no one can stop you. It is strictly *up to you*. The doctor and nurse in such cases have no chance to apply their knowledge until the mischief is done.

CHRONIC DISEASES OF ADULT LIFE

They are like the fire department, called in from the outside when the fire is making headway. They have had no opportunity to fire-proof the building, to install sprinkler systems, or to build fire-escapes.

**THE DISEASES OF ADULT LIFE
ARE OFTEN UNSUSPECTED
UNTIL TOO LATE**



Kidney Disease Heart Disease

These men look and feel well but each has a serious organic disease. Such diseases may often produce no symptoms of discomfort.

That is *your* job. You can do any or all of the things which bring on these diseases of adult life, and as long as you can keep from being a public nuisance you are accountable to no one but yourself. Perhaps this is the principal reason for the most serious fact in connection with these diseases—**THEY ARE ON THE INCREASE!** Whereas public hygiene has cut in two, and in some cases three, the death-rate from certain diseases, individual hygiene has been much neglected. In consequence, the number of deaths from diseases of the heart, blood-vessels, and kidneys, as well as from cancer and some other diseases, shows an alarming increase.

HOW TO PREVENT SICKNESS

In other words, most of the deaths under the age of ten, which are due to the contagious diseases and infant diarrhea, are steadily being cut down, whereas the deaths over forty, due to the chronic adult diseases which we are about to consider, are increasing.

Very few persons reach the age of forty physically sound in every respect. Those who pass for "well" are usually found, on better acquaintance, to be troubled with some slight disorder, such as indigestion, constipation, sleeplessness, headaches, catarrh, rheumatism, bad teeth, poor eyesight, or other "troubles." In themselves these may not seem to amount to much, but they are a sign that the person is headed the wrong way. The proper thing to do is to take steps to correct these small troubles before they lead to more serious ailments.

The old easy-going attitude of slapping yourself on the back, saying, "Oh, I guess *I'm* all right!" and thus keeping yourself in good humor until medicine or the knife is needed, must be abandoned.

Remember above everything else that you cannot "beat" Nature. No one can disobey the laws of health without paying for it, any more than he can draw a check against his bank-account without reducing the balance. He may not go bankrupt at once and may not even be inconvenienced until the money is actually gone, but Nature keeps her balances very accurately and in the end all claims must be paid.

CHRONIC DISEASES OF ADULT LIFE

The reliable estimates of authorities show that fully two-thirds of the deaths from chronic diseases of adult life are either postponable or preventable entirely. Surely if we are at all interested in our health it will pay us to consider how this reduction may be accomplished.

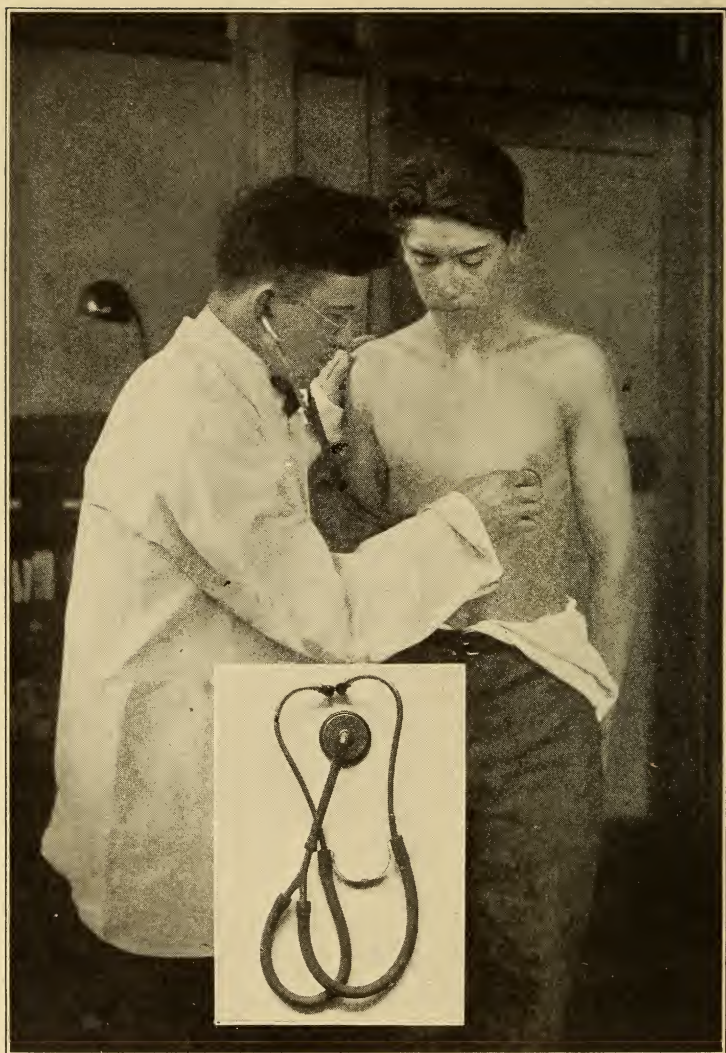
General Preventive Measures

(Of special importance to those in middle life.)

A. PERIODICAL PHYSICAL EXAMINATIONS.

All elevators are regularly inspected by qualified state inspectors so that they will not break down when in use and cause accidents. Railway locomotives and important shop machinery are inspected at frequent intervals for the same reason. Is it not common-sense to do at least as much for the human machine, the most complicated sort of mechanism, as we demand in the case of elevators and locomotives?

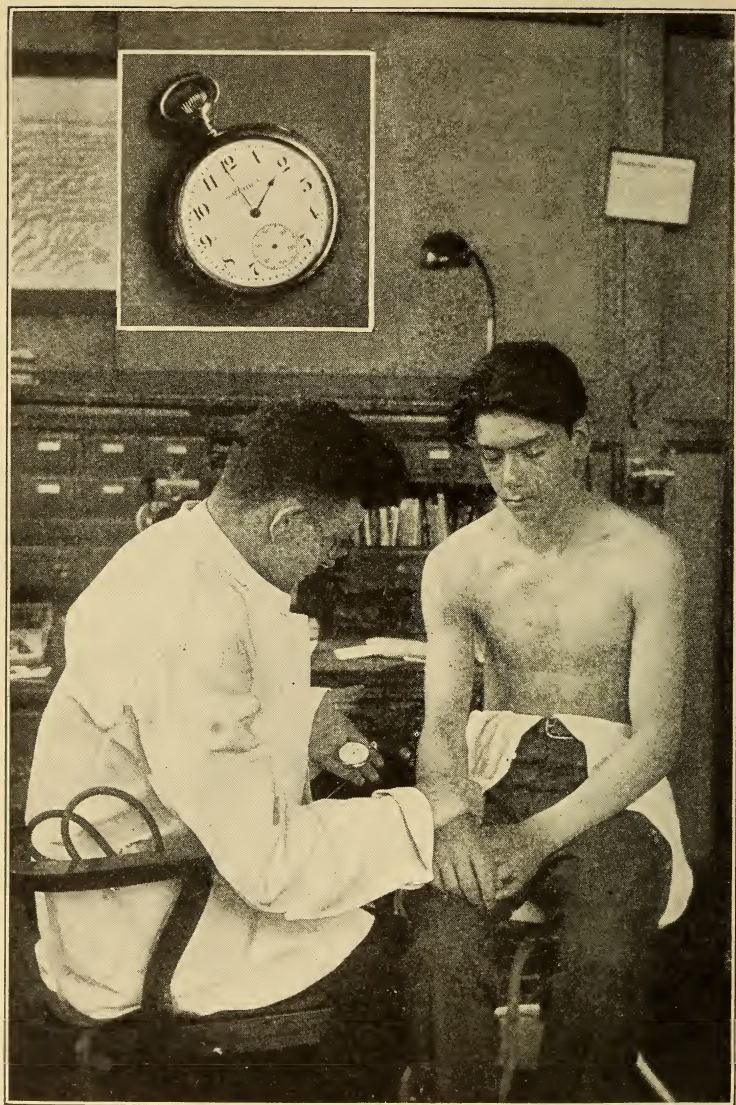
If every one lived exactly as he should—ate, drank, exercised, and rested in just the proper way—periodical physical examinations might not be so important. But we do not. Therefore, the next best thing is to find out at the earliest possible moment when we are headed for trouble. It is an unfortunate fact that diseases of the heart, kidneys, and blood-vessels may be firmly rooted and well under way before they begin to cause any dis-



STETHOSCOPE, USED IN TESTING THE HEART AND LUNGS .

CHRONIC DISEASES OF ADULT LIFE

comfort. Simply because some trouble has not yet become serious enough to force you to a doctor, and you are able to say, "It never bothers me," it is no reason for dismissing the matter with a shrug of the shoulders and forgetting about it. If a person were suddenly afflicted with pneumonia or lockjaw or any other acute disease he would lose no time in getting expert advice and demanding every known means to save his life, but his life may be threatened just as seriously, though possibly not quite so quickly, by heart trouble, high blood pressure, or Bright's disease, and he will do nothing to prevent the progress of these diseases until it is too late, but go right on eating and drinking as he pleases, overworking and worrying until he dies before he is fifty—right in the prime of life. It is very much as if a man were to drive an automobile month after month, never taking the time or trouble to tighten a nut or to repair a puncture or blow-out; neglecting to fill the grease-cups or to see that the radiator and batteries have sufficient water; and all the time "kidding himself" into thinking his car was in good condition as long as it did not actually stop. It *would* stop, of course, from lack of simple but necessary care, and yet the man most careful of his automobile and who would have it gone over by an expert occasionally to see that it was in good running order, and who would regard the careless driver we spoke of as a downright idiot, is very apt to be either amused or annoyed when he is told



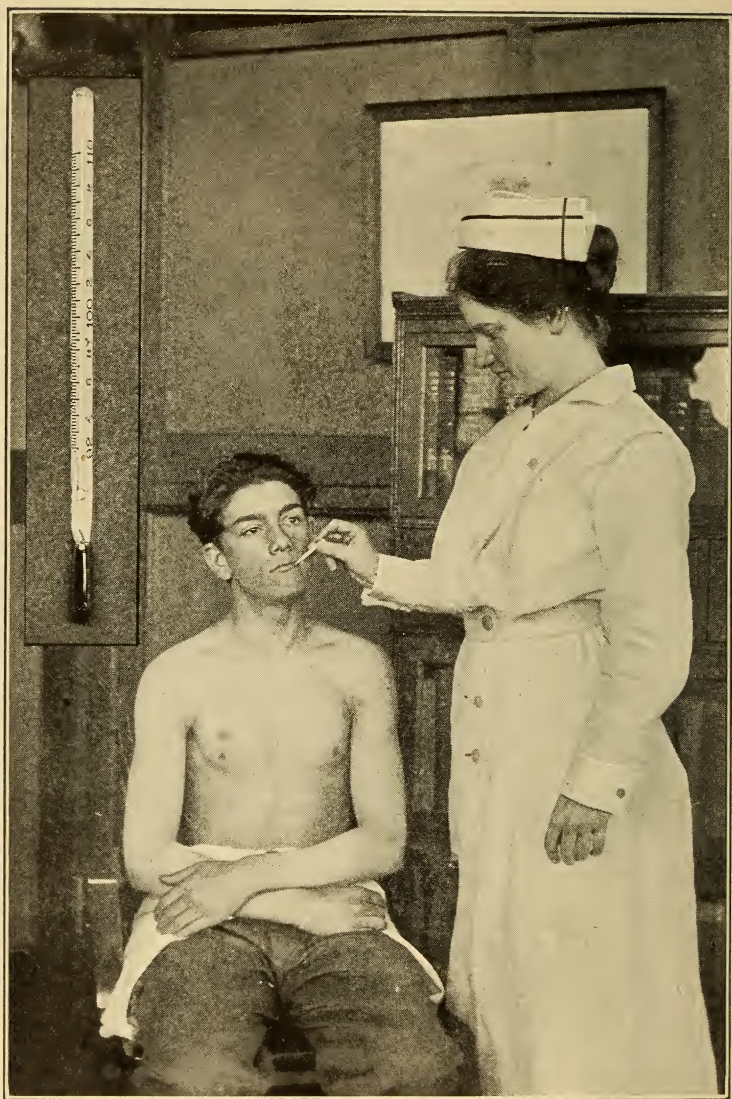
WATCH, FOR TAKING THE PULSE

CHRONIC DISEASES OF ADULT LIFE

that he should keep his own machine in good running order by occasional care and inspection. As long as he is not actually sick in bed he thinks it is unnecessary to give any attention to his health.

Our main hope in combating the chronic diseases of adult life lies in discovering their presence at an early date and in promptly taking the proper steps to prevent any further progress. The only practical way to do this is by having a thorough physical examination at regular stated intervals. You may look well and feel well and yet have serious disease of some sort; regular physical examinations, however, will give you the facts and in case of beginning trouble enable you to check it in time.

If you have reason to believe that you are in good physical condition you will be on the safe side if you are examined once a year. Should you have any chronic disease, however, the time between examinations ought not be longer than four or six months, this being left to the judgment of your physician. A doctor's fee for such a physical examination once or twice a year is a very small item as compared with the assurance and sense of safety derived from the knowledge that you are physically sound. As a matter of fact, physical examinations are the very best form of "health insurance" that you can have. More than this, two or three dollars spent in this way once a year pays big dividends, because a thorough examination will reveal slight defects or ailments which may be easily corrected if



THERMOMETER, USED TO DETERMINE THE PRESENCE OF FEVER

CHRONIC DISEASES OF ADULT LIFE

attended to at once. On the other hand, if they are neglected they may easily force you to spend several hundred dollars in hospital and doctor bills later on.

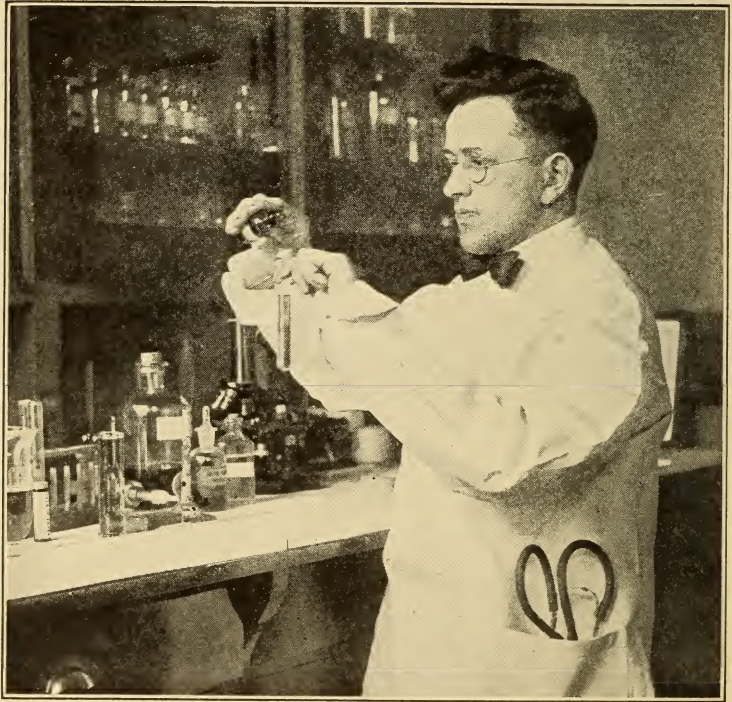
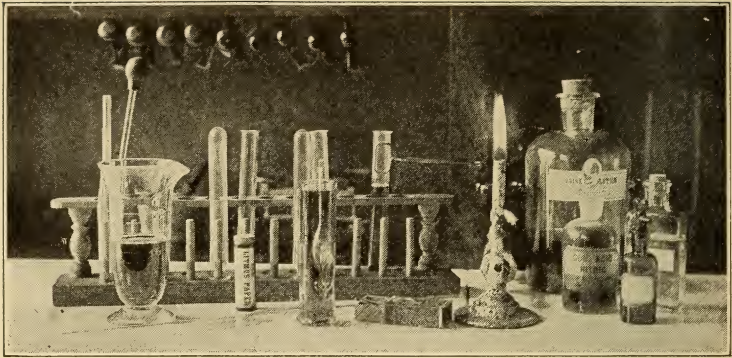
Briefly stated, the annual physical examination should cover the following points:

1. Careful inquiry into your living habits.
2. Examination of your eyesight and hearing.
3. Examination of your teeth and tonsils.
4. Examination of your heart and blood-vessels.
5. Examination of your lungs.
6. A search for enlarged glands in neck, armpit, elbow, and groin.
7. Examination for rupture.
8. Various tests to determine the state of your nervous system.
9. Measurement of your blood pressure.
10. A test of the quality of your blood.
11. A test of your urine for both albumin and sugar.

It almost goes without saying that no physical examination can be considered thorough or properly conducted unless you are at least stripped to the waist.

B. OBSERVANCE OF THOSE PRINCIPLES EXPLAINED IN PART I, AND WHICH MAY BE "BOILED DOWN" AS FOLLOWS:

1. Get enough to eat, but do not overeat. Three "square" meals a day, year in and year out, are



OUTFIT FOR TESTING THE URINE

CHRONIC DISEASES OF ADULT LIFE

not good for any one, not even the hardest outdoor worker. Avoid highly seasoned food—foods that are “hot” when they are cold. Overeating is especially harmful when it consists in taking too much meat, eggs, or cheese.

2. Drink at least six or eight glasses of water daily.

3. Get eight hours of sleep, with windows open, at least five nights in a week.

4. Get some form of regular daily exercise, either walking, gardening, or in connection with your usual employment. Exercise, like everything else, can be overdone. Athletes have ruined their health in running or in other ways, and you should always stop short of fatigue.

5. Bathe often. The best way is a warm spray every morning, followed by a cold spray and a vigorous rub-down. This is an excellent way of improving the circulation.

C. AVOIDANCE OF POISONS.

1. *The habitual use of drugs.*—Without starting a temperance debate, it may be stated as a proven fact that the constant use of alcohol even in small quantities is harmful. Steady, free drinking (not drunkenness) carries as heavy a penalty as certain diseases of the heart. As the education of the public concerning the effects of alcohol increases, so does the number of prohibition states, until at the pres-

HOW TO PREVENT SICKNESS

ent time the sale of liquor is against the law in twenty-three states. It is also a very significant fact that when it came to making their supreme effort England and Russia prohibited the use of alcohol, and such action is now being considered in this country.

Tea and coffee used immoderately, as well as excessive smoking, especially when the smoke is "inhaled," are no doubt accountable for many nervous disorders appearing in middle life. If you hear any one say "I'll stop smoking when I find it's getting the best of me; it doesn't bother me now," ask him if he believes in neglecting his teeth until the decay has gone far enough to reach the nerve. It is about the same idea, and if he waits for danger signals from smoking there is no reason why he should not wait for danger signals (tooth-ache) from neglected teeth.

The habitual use of headache powders and patent medicines should also be remembered in this connection.

2. *Constipation*.—When the bowels become sluggish and do not move at least once daily, certain poisons produced in the intestines are given a chance to be absorbed. This is apt to be the basis of a number of serious ailments.

3. *Chronic infections*.—The principal sources of trouble of this sort are diseased tonsils, tiny abscesses at the roots of the teeth (usually old crowns

CHRONIC DISEASES OF ADULT LIFE

and bridges), pyorrhœa (pus at the edges of the gums), and chronic appendicitis. As a result of these chronic inflammations poisons are absorbed into the circulation and these are a frequent and



FOODS OF VALUE IN THE PREVENTION OF CONSTIPATION

direct cause of rheumatism, neuritis, ulcer of the stomach, "hardening" of the arteries, and Bright's disease.

D. AVOIDANCE OF WORRY AND EXCESSIVE BRAIN-WORK.

Modern life, both socially and in a business way, is a greater tax on us mentally than was the case one hundred or even fifty years ago. There is no doubt but that we "live faster" now than our grandparents

HOW TO PREVENT SICKNESS

did. The automobile, the telephone, the telegraph, and the many other modern inventions have educated us to a point where we are impatient over necessary delays and are inclined to worry over trifles. When family responsibilities, business cares and worries, and the struggle against the high cost of living are added to the above, it is plain to be seen that many of us are putting too great a tax on our nervous system and are operating at too high a tension.

We must school ourselves to put system and order into our business methods or whatever our work may be; we must resolve not to allow ourselves to be irritated by trifles, and to cultivate some hobby outside of our regular work. This is really an important matter, for it is well known that mental strain due to worry, anxiety, and outbursts of temper is responsible for certain diseases, the most important being hardening of the arteries (arteriosclerosis), which causes high blood pressure and, in the end, apoplexy.

From all this it will be seen what it is necessary for us to do in order to prevent or postpone until we are seventy or eighty the chronic, degenerative diseases of adult life. The precautions apply principally, however, to heart disease (the most fatal of all diseases), kidney disease, and hardening of the arteries (high blood pressure and apoplexy). There remain to be considered several diseases which are in a large measure preventable, but which

CHRONIC DISEASES OF ADULT LIFE

are not covered by the above general preventive measures. As there are certain definite means of prevention for each one, they will be considered separately.

PART V

DISEASES WHICH ARE LARGELY PREVENT-
ABLE BUT NOT COMMUNICABLE

1. Cancer

A FEW FACTS ABOUT CANCER.

Above the age of forty cancer is more frequent than either tuberculosis or pneumonia, and of those persons who reach this age one in every eleven dies of the disease. At this rate, it is estimated that cancer claimed about 100,000 victims in the United States in 1916. The principal reason for this fearful death-rate is that treatment is so often delayed until the cases become hopeless. The sad and serious part of the matter is that nearly all of the 100,000 were adults—vigorous, healthy bread-winners or heads of households. Such a prevalent and fatal disease demands more than passing attention if it is to be lessened, and the closest and most careful study if it is to be finally conquered. It is useless to shudder and say, "Gracious! what a horrible thing cancer is!" and then forget about it until perhaps you are the next one attacked. It is of the greatest importance that we post ourselves on the few simple and known facts about the disease, so that when danger threatens we can act promptly and intelligently. It is not our purpose to arouse terror or a dread of the disease, but to tell in a simple

HOW TO PREVENT SICKNESS

way what cancer is, how it begins, where it usually locates, and what can be done to prevent or cure it. Then we can be on the lookout and get expert advice at the first sign of the danger signals of the disease.

Cancer is not hereditary—that is, it is not passed on from parent to child. It sometimes happens that a person with a cancer had a father or mother who died of the disease, but that is not the reason he has it any more than that he may be poor simply because his parents were poor. Neither is cancer contagious, nor is it spread in any way from person to person. The cause of cancer is still unknown, but this does not prevent our being able to cure it in most cases if we will only use the knowledge we already have.

Unlike tuberculosis, cancer does not seem to attack the weakling any more than it does those who are strong and healthy. It does, however, seem to accompany certain conditions of rich and luxurious living, so that in a general way we can say that the idle rich are more apt to be attacked by cancer than they are by tuberculosis, while the opposite is also true.

WHAT CANCER IS.

Tumors and cancers are not one and the same thing. A tumor is a growth or lump of any size anywhere in the body. In that sense all cancers, unless they are just starting, are tumors. But there are many other kinds of tumors that are not

DISEASES LARGELY PREVENTABLE

cancers.' Cancer is a very curious disease which is due to certain cells of the body multiplying so fast that they seem to "run away with themselves." When neglected, large lumps, or tumors, are formed which eat their way into the surrounding tissues and press on vital organs. The origin of cancer has been compared to the situation in a family which is seated at the dinner-table when a supposed relative arrives and is given a place, the new-comer eating all the food and finally the family itself. That is about the way a cancer behaves. It starts very quietly, is small at first, but gradually grows until it destroys the very tissues that feed it, until at last it kills a person by injuring some vital part of the body.

PARTS OF THE BODY MOST FREQUENTLY ATTACKED.

In men, the stomach, bowels, and skin are attacked most frequently and in the order named, while in women most cases of cancer occur in the womb and breast.

HOW CANCER BEGINS.

While, as we said, the exact cause of cancer is not known, still, we do know a good deal about how it starts and what is apt to bring it on. Irritation of certain parts of the body seems to be frequently followed by cancer. For instance, when moles or warts are continually rubbed or irritated by the clothing or are made to bleed or are kept

HOW TO PREVENT SICKNESS

sore by repeated injury, cancer is apt to result. The ragged edge of a decayed tooth may irritate the inside of the cheek or tongue so that a chronic ulcer will form on which finally develops a cancer. Cancer is frequently seen in hard smokers; the hot smoke from pipe or cigar strikes the same place year in and year out, irritates it, and favors the production of cancer. That is why cancer of the lip and tongue are common in men and are almost never seen in women. The irritation of an ulcer of the stomach is frequently responsible for the ulcer later turning into a cancer. Cancer of the breast usually follows inflammation with its accompanying irritation, and, lastly, cancer of the womb is often seen in women who have had several children, while in those who have not it is infrequent. The process of child-bearing sometimes tears the womb; this results in a chronic irritation which, if neglected, is apt to be the starting-point of cancer.

DANGER SIGNALS.

Remember that the "cancer age" is from forty-five to sixty-five and that the signs mentioned below will always bear close investigation when they occur at this time of life.

1. Loss of weight.
2. Unusual pallor.
3. Persistent disturbances or "upsets" of the stomach or bowels.
4. A wart or mole which shows a tendency to grow.

DISEASES LARGELY PREVENTABLE

5. The appearance of a lump anywhere in the body. It may prove to be only an abscess or some simple harmless tumor—a physician can usually tell. A lump in the breast should always be regarded with grave suspicion, especially when it appears after the age of forty.

6. Any persistent discharge occurring after the “change of life,” no matter how slight in amount. It is particularly suggestive if the discharge is bloody. Also slight bleedings between the “periods,” before the change of life has taken place, should be brought to the attention of a physician.

You will notice that pain has *not* been mentioned—it is one of the *last* symptoms of cancer. When a person with cancer suffers pain it is usually a sign that the cancer has become firmly rooted and that there is not much that can be done.

PREVENTION AND CURE OF CANCER.

As a matter of fact, cancer cannot really be prevented, as it is apt to occur in spite of anything we may do to prevent it. There are certain precautions, however, which will lessen the chances of cancer and which, once it has started, will greatly increase the probability of a cure.

1. Annual physical examination. While this alone cannot be relied upon, still, the careful examiner will often stumble on a case of beginning cancer which might otherwise have run along for several months unnoticed.

HOW TO PREVENT SICKNESS

2. Avoidance of unusual or persistent irritation of any part of the body. Whether it be excessive smoking, a sharp tooth, a wart or mole which bleeds frequently, an ulcer of the stomach, or a tear of the womb, attend to the matter and thereby lessen the chances of cancer by just that much.

3. Report promptly to your physician *at once* if you notice any of the danger signals mentioned above, such as loss of weight, persistent indigestion, growing moles or warts, chronic ulcers (especially in the mouth), unusual flowing or discharge, or a lump in the breast. If your physician is in doubt about the nature of such a lump it should either be removed entirely as a "safety first" measure or else a portion of it obtained for examination under the microscope. This cuts out the guesswork, just as an X-ray does in the case of a broken bone. As a general rule, remember that any lump in the breast *may* be cancer, and on this account, if the lump does not disappear of its own accord within two weeks, it should be removed. If this rule were followed thousands of lives would be saved. In other cases, careful study with the aid of X-rays and chemical tests may be necessary before the doctor can be sure the trouble is not cancer.

4. Operation. Just as cancer is practically always incurable in its later stages, so is it easily cured if promptly recognized and removed at once by competent treatment. It cannot be too strongly emphasized that THE CURE OF CANCER CONSISTS

DISEASES LARGELY PREVENTABLE

IN THE COMPLETE SURGICAL REMOVAL OF THE GROWTH AT THE EARLIEST POSSIBLE MOMENT. This is the best and most successful method of curing the disease. Incomplete removal is worse than no treatment at all, as it only irritates the cancer and causes it to grow faster than ever.

Most cancers grow slowly for the first few months, and if they can only be discovered and cut out in the early stage—"nipped in the bud"—a cure is bound to result. On the other hand, the surest way to die from cancer is to adopt a policy of "watchful waiting."

5. X-rays and radium are helpful in certain cases, as in cancer of the face in old people, or wherever an operation is not possible or where it might be too disfiguring. The authorities say that the X-ray is just as valuable as radium in the treatment of cancer, and it certainly is much less expensive.

CANCER "CURES."

As long as thousands of persons continue to die each year from cancer there will be a field for quacks and fake cancer "cures." Warning is hereby given that no internal medicine, no marvelous salve, paste, or ointment, no fluid injected under the skin, or any other similar treatment, has ever cured a case of real cancer; all they can do is to raise false hopes. The employment of such useless remedies would not be so serious if it were not for

HOW TO PREVENT SICKNESS

the valuable time lost in finding out that they do no good. Patients, after wasting not only their money, but precious weeks and months, in this way, too often decide upon an operation, only to be told by the surgeon that their case is hopeless and that nothing can be done. Had they gone to him at first they would have had the best possible chance for a cure.

The "last word" on the subject of cancer is, go to a surgeon of good standing *at once*, as soon as any lump or sore or other danger signal appears that does not go away in a few weeks. The earlier you have proper treatment the less the danger, the less the pain, the less the disfigurement, and the less the expense. A trivial operation may often prevent the necessity of a serious one and may save your life as well.

2. Constipation

NORMAL DIGESTION.

In health, the food we eat enters the stomach, where it remains for about three hours, there being acted upon by certain juices. It is in this way prepared for full digestion and absorption in the small intestine, into which it passes from time to time in small quantities. The intestines are about thirty feet in length, the small intestine being smaller in diameter but much longer than the large intestine, which is only six feet in length. After the

DISEASES LARGELY PREVENTABLE

nourishing elements in the food are extracted in the small intestine and taken up by the blood, the contents pass into the large intestine. Here most of the water is removed, the remaining substance being useless waste matter which is passed on and finally expelled.

WHAT CONSTIPATION IS.

Bowel movements should occur at least once daily. When the bowels do not move as often as they should or when the action is insufficient, the resulting condition is known as constipation.

For the sake of better understanding, the stomach may be compared to a kitchen where the food is prepared; the intestine to a dining-room where the food is eaten; while the last portion of the large intestine, or rectum, is the sewer of the body. You know how necessary it is that a garbage-can be emptied frequently. So it is with the bowels; if they do not act properly, the contents decompose and poisonous substances are produced. The absorption of these poisons is often the cause of serious trouble.

SOME RESULTS OF CONSTIPATION.

Probably no condition is so common, so preventable, and yet so apt to favor the development of disease elsewhere in the body as constipation. Perhaps the most important trouble brought about by constipation is appendicitis. Nearly every one

HOW TO PREVENT SICKNESS

operated upon for appendicitis states that he was troubled with constipation for a long time before the attack. Headaches, piles, and loss of energy are other conditions which frequently result from sluggish bowel action. If constipated, you are much more liable to colds and other troubles of the sort. It is a familiar fact that when a doctor is called, usually one of the first things done is to clean out the bowels with a cathartic. The idea is that if Nature is to be successful in fighting a disease it is necessary that she be not handicapped by having to combat in addition the poisons produced as a result of stagnating bowel contents.

PREVENTION OF CONSTIPATION.

This will be accomplished for the most part if we keep from doing those things which tend to cause constipation. The natural action of the bowels depends upon two things: first, the contractions which push the intestinal contents along, and, second, the secretions of the bowels which tend to lubricate the lining of the intestines and render easy the passage of the waste matter. Therefore, we should

A. Drink plenty of water so that the bowel secretions (which are mostly water) will form readily. This means at least six glasses of water a day in winter and eight or ten in summer.

B (1). The best "bowel-regulators" are foods. Keep clearly in mind those foods which are coarse

DISEASES LARGELY PREVENTABLE

and bulky and which leave an undigested residue; this in its passage through the bowels stimulates the lining and produces the normal contractions spoken of. Such foods are most fresh, green vegetables, especially string-beans, turnips, squash, raw cabbage, lettuce, spinach, and other greens. Fresh fruit, such as apples, grapes, and pears, also belong in this class, while coarse bread containing bran or the entire part of the grain has a similar effect. Such breads are rye, whole wheat, graham, and brown bread.

(2) Certain other foods have a mild laxative action, such as figs, stewed prunes, and fruit juices.

(3) Keep clearly in mind those foods which have a decidedly constipating effect. They are meat, fish, eggs, boiled milk, cheese, macaroni, spaghetti, rice, cornstarch, tea, and cocoa.

If you have the slightest tendency toward constipation, you should memorize the above foods and try to make at least a few of the laxative foods a part of your daily diet, and "go easy" on those that are constipating.

C. *Exercise*.—Get a moderate amount of exercise daily. Walk to and from your work whenever possible; if you live at a distance, ride part way and walk the rest. Regular daily exercise in the open air is undoubtedly one of the greatest preventives of constipation.

D. *Regularity*.—Go to the toilet at a regular time every day; the best time is just after break-

HOW TO PREVENT SICKNESS

fast. Did you ever hear of a horse being constipated? Certainly not. The reason is that he not only eats the proper sort of food, but moves his bowels at the slightest inclination. Do not permit modesty or rush of business to cause you to postpone this matter when you feel the inclination to go. If the desire to move the bowels is not attended to at once that desire will gradually disappear.

Constipation should be overcome, if possible, without taking medicine. Powerful pills and "salts" are usually unnecessary, are apt to produce a habit, and in the end make the constipation worse, for the reason that the intestines come to rely on them.

3. Obesity

HOW TO TELL IF YOU ARE OVERWEIGHT.

Here is a simple rule by which you can tell roughly whether you are too stout or do not weigh enough. This applies to those between the ages of twenty and fifty. Divide your weight by your height (in inches).

If the result is over 3, you are overweight.

If the result is under 2, you are underweight.

If the result is about $2\frac{1}{2}$, your weight is normal.

For example, a person 5 ft. 10 in. in height (70 inches) weighs 175 lbs.; 175 divided by 70 equals $2\frac{1}{2}$, which shows that the weight is just right for the height.

DISEASES LARGELY PREVENTABLE

RESULTS OF OVERWEIGHT OR OBESITY.

Aside from the inconvenience, fat people do not, as a rule, live to be as old as those who are well proportioned. They are also more apt to develop diabetes, constipation, gout, and the chronic diseases of adult life such as heart and kidney disease, and also hardening of the arteries. For this reason, life-insurance companies do not accept persons who are considerably overweight.

WHY PEOPLE GET FAT.

There is no doubt that some people are fat because their parents are fat, but in most cases obesity is due to overeating combined with lack of exercise.

Sometimes when people are underweight it may be impossible to bring their weight up to normal. The reason for this is that the difficulty is due to poor assimilation—that is, no matter how much food is eaten or how nutritious it may be, the body refuses to use it to build up with. It is quite different in the case of stout people, however. If less food is eaten than is presented by the amount of energy expended in their daily life THEY MUST GET THIN—no power on earth can prevent such a result.

PREVENTION OF OBESITY.

1. Weigh yourself and by the use of the rule given above see if your weight is correct for your

HOW TO PREVENT SICKNESS

height. Then by weighing several times a year you can keep a check on things. If you find your weight remains about the same, it is unnecessary to give a thought to what you eat as far as fat-producing foods are concerned. On the other hand, if you are over forty and notice that each time you weigh yourself you are just a few pounds heavier than you were before, then it is time to take steps to check the tendency and you cannot begin too soon.

2. Have clearly in mind those foods which are fat-producing. "Go easy" with them, and, when it is not a hardship to do so, give up certain ones entirely.

Foods to be avoided or used very moderately by those showing a tendency to become fat:

Sweets (sugar, pastry, cake, and candy).

Fats (butter, cream, olive-oil, and nuts).

Oily fish (mackerel, herring, sardines, and salmon).

Greasy meats (pork, goose, and sausage).

Milk as a beverage, chocolate, and all alcoholic drinks.

Water with your meals.

Eat *less food* of all sorts than you have been in the habit of eating. Stop short of satisfying your hunger entirely; it won't hurt you and will help bring your weight down and keep it where it ought to be. If you find that you feel "empty" you can fill up on string-beans, tomatoes, cabbage,

DISEASES LARGELY PREVENTABLE

carrots, spinach, lettuce, or other greens. They have the advantage of adding bulk to the diet and contain very little real nourishment. To illustrate this, you would have to eat ten dollars' worth of lettuce and tomato salad to produce 2,500 food units (the amount of fuel for an average day's work), while forty cents' worth of butter would furnish the same amount of energy.

By chewing your food a long time your appetite will be satisfied by a smaller quantity.

3. *Exercise*.—Moderate exercise tends to reduce fat, and the more you perspire the better. Special gymnasium exercises are better than walking, swimming, or other outdoor sports, as they are not so apt to increase the appetite.

Keep tab on your weight, and when you have accomplished the desired reduction let up on your diet a little, but not so much that your weight goes up again. By following the above rules almost any person can, with a little common-sense and a good deal of persistence and will power, keep his weight down where it should be. There is, however, no mysterious method which will accomplish this and at the same time permit you to eat anything you care to or go entirely without exercise.

4. Diabetes

This disease is more apt to develop in stout persons than in those who are well proportioned. It

HOW TO PREVENT SICKNESS

is a "wasting" disease, the one sure sign of which is the appearance of sugar in the urine. The "Allen" treatment is the modern way of dealing with the disease and consists of dieting along scientific lines. It usually results in the cure of diabetes if the disease is discovered in time. Our principal hope, then, in THE PREVENTION OF DIABETES lies in discovering the disease early.

1. Periodical physical examination. Every thorough examination will include a test of the urine. If this is found to be free of sugar, it may be safely assumed that no diabetes is present.

Sometimes the urine of healthy persons will give the sugar test. This usually follows the eating of considerable candy or other sweet or starchy food. To settle the question, then, it is necessary, in case the first specimen is found to contain sugar, to examine additional samples both on the next day and the day following. If diabetes is really present, all three specimens will show sugar. On the other hand, if there is no trouble the last two will probably show nothing.

2. The children of diabetic parents should, in addition to frequent tests of the urine, avoid eating much, if any, candy, sugar, cake, or other sweets.

No doubt some of you who read this book will think that there is so much you have to do in order to prevent sickness that you will say, "Oh, well!

DISEASES LARGELY PREVENTABLE

Before I go to all that bother and trouble I'd rather be sick!" That, of course, is a question for *you* to decide. However, once you get in the habit of living in the right way it becomes almost second nature and is not nearly the trouble that it may seem. A little thought and care and work and planning always have been and always will be necessary if we expect to get ahead in the world. You are willing to do these things for the sake of your home, your family, and your future. Why not for the sake of your health? Health is, without question, the most important of all things, for without it you become a burden to others and much of the joy of living is taken away.

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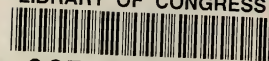
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